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Subject: ***Focused Feasibility Study for the Second Interim Remedy***
North Hollywood Operable Unit, San Fernando Valley Superfund Site

Dear Ms. Salyer:

This letter provides comments on the July 2009 draft Focused Feasibility Study (FFS) for the North Hollywood Operable Unit (NHOU), San Fernando Valley (SFV) Area 1 Superfund Site, Los Angeles County, California, prepared by the U.S. Environmental Protection Agency (EPA; USEPA, 2009). The NHOU is located at 11600 Sherman Way, North Hollywood, California (Site), which is known as the "former Bendix facility." The FFS presents an evaluation of NHOU conditions since implementation of the First Interim Remedy in 1989, and proposes cleanup goals and remedial alternatives for the implementation of a Second Interim Remedy.

GENERAL COMMENTS

The key objective of the Second Interim Remedy is to "ensure the groundwater cleanup achieved by the Second Interim Remedy is sustained over the long term, by working closely with the state to pursue effective and timely remediation of contaminant source areas at individual facilities within the NHOU. This includes controlling contaminant sources that occur above, at, or below the water table to maximize the ability of the Second Interim Remedy to contribute to long-term remediation of groundwater." Of special concern is protecting well fields currently being operated by the Los Angeles Department of Water and Power (LADWP).

Honeywell recognizes the importance of preventing contaminant migration and remediating the aquifer so the groundwater resource can be used by LADWP in a timely manner. However, we believe that EPA is proposing a set of remedies under the FFS while lacking very important data regarding the extent of the contaminant plume and potential sources that must be taken into consideration before a remedy is selected. **Moving forward with the Second Interim Remedy without a more complete understanding of the contaminant plumes may hamper use of groundwater as a drinking water source by exacerbating contaminant plume migration and increasing the risk of production well shutdown** due to "unintended consequences." This could be avoided through the collection of additional data, improved design of remedial systems, and careful management of production well operations. EPA's *Proposed Plan for Enhanced Groundwater Remedy* (Proposed Plan), if executed as currently written, may make long-term restoration of the aquifer more difficult and time-consuming to achieve.

Data gaps that need to be addressed include: the extent of the contamination, location of source areas, and potential impacts to drinking water wells. Gathering information on potential sources and the extent of the contaminant plume should result in a remedy that will minimize contaminant plume migration, minimize risk of unanticipated production well shutdown, and maximize beneficial groundwater use.

Additional source information should be considered before selecting a Second Interim Remedy. This would lead to a more effective and efficient remedy and would facilitate settlement by other potentially responsible parties (PRPs). The uncertainty generated by proposing a remedy that may have to be revised later will make it very difficult for the PRPs to organize themselves to move forward with a remedy.

Honeywell has entered into an Administrative Order of Consent (AOC) with EPA to install and sample 33 groundwater monitoring wells in the NHOU. EPA approved the Work Plan developed by Honeywell for Additional Groundwater Monitoring Well Installation in North Hollywood Operable Unit ("Work Plan") dated July 27, 2009. Among several objectives, the Work Plan is designed to better identify contaminant sources and delineate the extent of contaminant plumes. This work will support decision-making for the selection and design of the Second Interim Remedy. Field activities, including sampling and data collection, under the Work Plan have begun, and the data will be available in the first quarter of 2010. EPA states throughout the FFS the benefit and value of source identification and plume delineation, but has declared its intention to consider that information only as part of a Third Interim Remedy, which risks exacerbation of contaminant plume migration and shutdown of production wells, while making long-term restoration of the aquifer more difficult and time-consuming to achieve.

Given the significant data gaps at the NHOU and the potential for adverse impacts on water quality, Honeywell advocates that EPA assess the information from the 33 groundwater monitoring wells, as outlined in the Work Plan, before selecting the Second Interim Remedy. If EPA does not favor this approach, then we propose an alternative approach of moving forward with appropriate elements of the Second Interim Remedy and incorporating the new data from the Work Plan into the Third Interim or the Final Remedy.

An alternative approach for the Second Interim Remedy, which is called "***Alternative 6***" to distinguish it from the options EPA identified in the FFS and Proposed Plan, is outlined below. Alternative 6 reduces the risk of exacerbating contaminant plume migration while improving plume containment where data are sufficient to support such actions. Under Alternative 6, EPA would move forward with the following elements of the Proposed Plan:

- Remediation of chromium at NHE-2, with consideration of treating NHE-2 water with equipment located at the former Bendix facility to achieve better efficiency and cost savings;

- Improving groundwater containment in the area of NHE-4 and NHE-5, either through the installation of new wells or the rehabilitation of NHE-4 and NHE-5 in a manner that minimizes downward contaminant migration;

- Refurbishment of the existing air stripper and the addition of carbon polishing (granular activated carbon or "GAC") at the NHOU Central Treatment Facility; and,

- Implementation of source control under RWQCB oversight and orders.

An analysis would be made of the following elements of EPA's Proposed Plan after more data has been collected to substantiate whether these measures will be effective in remediating the aquifer for drinking water purposes:

- Installation of three NEW pumping wells and deepening of NHE-1, which are not technically justified based on available data, and which may exacerbate contaminant plume migration;

- Deepening of NHE-2, as investigation at the former Bendix facility indicated that NHE-2 is of sufficient depth to capture the high concentration contaminant mass;

- Deployment of remediation for 1,4 dioxane at NHE-2, which requires further information to determine its necessity, and

- Elimination of a second carbon stripping tower and carbon polish at the NHOU Central Treatment Facility which is not necessary under Alternative 6 in terms of throughput to the system.

As shown in the attached table (***Attachment 1***), Honeywell concludes that Alternative 6 best meets the nine CERCLA criteria for an effective remedy. Based on available information, EPA has not established that its preferred $109 million Second Interim Remedy will effectively protect human health and the environment, will be permanent, will reduce contaminant plume migration (mobility), will be implementable vis-à-vis stakeholder acceptance (especially PRPs), and will be cost-effective. Moreover, in light of the significant data gaps, it is not possible to rule out the potential for EPA's preferred remedy to exacerbate conditions in the NHOU. In the current economic climate and era of limited resources, it is critical that spending on remediation be fully justified and not result in adverse outcomes such as migration of the contaminant plume or delays in utilization of the groundwater resource. As shown in ***Attachment 2,*** Alternative 6 is estimated to cost in the range of $60 million and is a technically defensible, implementable set of interim measures that will significantly enhance remediation, while allowing for a more careful evaluation of future options toward the Final Remedy.

Incorporating Groundwater Data into Remedy Selection will Expedite Implementation

Incorporating data from the 33 groundwater monitoring wells into the remedy selection process will not delay the overall schedule. In fact, incorporating this data will provide an improved understanding of hydraulic gradients, extent of the plumes, and the relation between contaminant plumes and sources. With this information in hand, the process of FFS finalization and Record of Decision (ROD) approval will likely be expedited as there will be less uncertainty, which means more informed decision-making, fewer potential comments, questions, and revisions, and fewer delays implementing the most appropriate remedy to restore the safe productivity of groundwater supplies. More importantly, the Remedial Design (RD) timeframe should be substantially reduced because the information described above will have already been evaluated and considered during remedy selection, thereby expediting the design and implementation phases.

This approach will benefit EPA by avoiding the potential issue of changing direction in the face of public expectations that may develop based on a premature, partially-informed decision embodied in a ROD. This situation could occur if the findings of the ongoing investigation suggest that a different remedy may be more appropriate. Stated another way, EPA's decision-making process will not be constrained by the appearance that it is making an "about-face" if the selected remedy is ultimately not suitable, based on the results of the groundwater investigation.

The Additional Data is Valuable to Remedy Selection

The alternatives analysis presented in the FFS is based on a relatively sparse monitoring network resulting in significant data gaps throughout the NHOU area. The Executive Summary and body of the FFS state:

> *The fact that EPA does not have data or has limited data from some facilities is not an indication that a particular facility did not contribute to the contamination. It is possible that additional sources or facilities have not yet been identified.*

Furthermore, in the FFS EPA acknowledges the need for further groundwater characterization, including the Hewitt Pit and the northern landfills, Depth Zone 2 around the Rinaldi-Toluca and Whitnall well fields, the southeast edge of the chromium plume at the former Bendix facility, and chromium in the northern portion of the NHOU (particularly in the area of the Bradley Landfill). These investigations need to be completed prior to remedy selection to ensure that the remedy meets intended objectives while minimizing migration of the contaminant plume and the risk of unanticipated production well shutdown.

As just one example, EPA acknowledges on page 4-32 of the FFS that the "target volume [at the Hewitt Pit] is poorly delineated at present and will require further investigation prior to development of a containment or remediation strategy." Regardless of this acknowledgment, a significant component of the proposed remedy is installation of three NEW pumping wells that will create a hydraulic divide to improve containment of contaminated groundwater southeast of LADWP's Rinaldi-Toluca wells and east of LADWP's North Hollywood West Well Field. Data recently obtained from two of the 33 groundwater monitoring wells being installed in NHOU by Honeywell, along with existing data from adjacent wells, is shown on the attached geologic cross-section (***Attachment 3***). As illustrated on the cross-section, volatile organic compounds (VOCs) appear to be prevalent both north and south within proximity of the Hewitt Pit. Flow lines on Figure 4-15 of the FFS suggest that the capture zone from the Rinaldi-Toluca wells extend into the area of the Hewitt Pit. These data indicate that further investigation of the Hewitt Pit is necessary to determine whether the pit is a source of VOCs. If the three NEW pumping wells are installed without further investigation, groundwater pumped from these wells could result in migration of VOCs from the vicinity of the Hewitt Pit, northeasterly toward the Rinaldi-Toluca wells. Depending on pumping influences, the VOC plume could migrate and cause degradation of water quality in the Rinaldi-Toluca wells.

As shown in ***Attachment 4***, there are 26 locations of known soil and/or groundwater impacts. Additionally, based on a review of land use maps, historical aerial photographs, Sanborn maps, and historical city directories, there are more than 100 facilities within the industrial zone of the NHOU that historically or currently use chemicals of concern (COCs). Installation of the 33 proposed wells will provide additional information on whether these known and potential sources may have impacted groundwater quality in the NHOU. Understanding the source is important to the selection of a remedy that minimizes migration of the contaminant plume, minimizes the risk of unanticipated production well shutdown, and maximizes beneficial groundwater use.

As stated in the Proposed Plan, "[t]he exact number, location, and pumping rates for the groundwater extraction wells are estimated and will be finalized during remedial design." This statement is an acknowledgment that it is more appropriate to propose remedial strategies after the collection and analysis of groundwater data being obtained from the 33 newly-installed groundwater monitoring wells. Groundwater quality information obtained from these monitoring wells will provide a refined understanding of anticipated influent concentrations that can be used to support selection of a treatment train. The number and size of the air stripping and carbon treatment units at the NHOU Central Treatment Facility will need to be re-evaluated after the target cleanup area is revised and the location and pumping rates of wells has been determined.

Additional Source Information Will Enhance Well Field Protection

Besides the aforementioned benefits of filling data gaps prior to remedy selection, the currently proposed FFS remedies appear to have been developed without adequate data that will ensure that the selected remedy will achieve the objective of protecting LADWP production wells. At this time, more emphasis should be placed on defining, justifying and analyzing the target zones, potential sources, worst-case drought conditions, optimal hydraulic control, and model assumptions to increase the certainty that well fields will be protected. This would help avoid future groundwater supply well shutdowns.

For example, the Proposed Plan states that three NEW pumping wells will be installed that will create a hydraulic divide to improve containment of contaminated groundwater southeast of LADWP's Rinaldi-Toluca wells and east of LADWP's North Hollywood West Well Field. More specifically, the NEW pumping wells should prevent chromium contamination at the former Bendix facility from reaching the Rinaldi-Toluca well fields. Currently, there is no groundwater data that demonstrates chromium migration from the former Bendix facility towards the Rinaldi-Toluca wellfield. Preliminary contaminant transport modeling indicates that pumping of these NEW wells may actually cause the migration of the contaminant plume from the former Bendix facility, exacerbating the plume and increasing the cleanup time and cost. In the absence of supporting data, the FFS does not provide justification for operating these wells as remediation wells. In fact, there purpose appears to be more for water supply than for remediation.

Currently, there is no data indicating the presence of chromium in groundwater between the former Bendix facility and the Rinaldi-Toluca wellfield. NHE-1 has not been tested for chromium or hexavalent chromium. There is only one monitoring well in this area (NH-VPB-06), which has a chromium concentration of 2.4 µg/L. Production wells along the southeast end of the Rinaldi-Toluca well field have chromium levels of <2 µg/L. A groundwater sample from newly-installed groundwater monitoring well R-2, located near the southeastern edge of the Rinaldi-Toluca wellfield, indicates only 0.83 ug/L hexavalent chromium. Field screening during the installation of monitoring well T-1, located southeast of the wellfield, indicates less than 0.27 ug/L hexavalent chromium. The cost estimate of $30 million for these new extraction wells and ex situ chromium treatment is too much to commit for a contingency that may or may not happen.

Protection of the Rinaldi-Toluca wellfield should be addressed in the Groundwater Management Plan, not by $30 million in remedy costs. The Groundwater Management Plan could include monitoring of NHOU T-1 and T-2 as sentinel wells. There will be ample time to evaluate the most cost-effective response if chromium is observed in these wells. The ROD could include a contingency in the event that monitoring and sampling of these wells indicates chromium migration toward the Rinaldi-Toluca well field. The contingency should consider other potential more effective and less costly alternatives such as Rinaldi-Toluca wellhead treatment or a transportable treatment unit. In the absence of data, EPA's approach, as presented in this FFS, could result in expensive and inefficient remedial action with the outcome being additional production well shutdown, resulting in diminished drinking water supplies.

Identification of sources will also allow more on-site treatment, which will result in reducing the volume of groundwater that will ultimately become contaminated, the need to treat groundwater at production wells, and the time ultimately required for remediation. Honeywell has implemented a soil vapor extraction system to treat VOCs, and as a result, VOC concentrations in groundwater have substantially declined. Honeywell is also undertaking in situ treatment of hexavalent chromium, which will greatly reduce the mass of chromium that will require treatment elsewhere. A better understanding of other sources will allow for similar on-site treatment efforts and reduce the risk of production well shutdowns from unknown/unanticipated sources that result in contaminant migration to these wells when placed on-line.

Collecting Additional Data Will Also Enhance the Likelihood of Success in PRP Settlement Discussions

In order to ensure successful implementation of the Second Interim Remedy by PRPs, proper identification of source areas is necessary to ensure the resolution and agreement of all PRPs. A more source-focused remedy may also increase the willingness of PRPs to settle their potential liability, which could reduce both the timeframe of reaching settlement and the risk of litigation over liability. Commencing with data collection and locating sources of contamination before selecting a remedy will ultimately make it easier to improve decision-making by the PRPs and will streamline their cooperation with EPA and LADWP.

The absence of source information will make it very difficult for PRPs to determine the amounts they might be willing to pay to settle their potential liability. As we have already seen during the negotiations last year regarding provision of additional funding to extend the operation of the First Interim Remedy, several of the PRPs that had previously agreed, in either 1995 or 1996, to contribute funding towards operation of this remedy took the position that they were not responsible for the contamination being addressed by this remedy. Others agreed to pay a share of the additional funding required, but served notice that they do not see connections to some of the contaminants. This unwillingness to settle was based on, for example, *No Further Action* letters from the RWQCB. Many of these letters may have been premature because groundwater quality had not yet been evaluated.

Additional uncertainty would result if a preferred remedy were published without critical information because it would be assumed that the remedy would likely change as information is developed, making it difficult for parties to initially assess the appropriate scope of their participation. In light of the recent *Burlington Northern*[1] decision of the United States Supreme Court, these same PRPs most certainly will take the position in negotiations over the Second Interim Remedy that, in the absence of any new source information, they have either no liability or a small divisible liability for localized contamination. This will leave the few parties for which source information has been developed facing the daunting prospect of having to fund an extremely expensive remedy. Negotiations between EPA and the PRPs will be made more fractious, and given the amounts at stake, the risk of litigation rather than a negotiated solution will be dramatically increased. Under this scenario, a situation could arise wherein EPA finds they have to fund the orphan share of the remedy; therefore, source identification should be very important to EPA as well.

One reason that EPA may be selecting a remedy at this point, is that the agency wants to have a remedy selected to which the PRPs could react in the settlement negotiations that would follow the ROD. As a practical matter given the magnitude of potential costs and the uncertainties in the FFS, the most likely work the PRPs would agree to perform would be the groundwater characterization work. This is the component that Honeywell has agreed to expedite.

Recommended Path Forward

In summary, we recommend that EPA use the data from the ongoing NHOU Groundwater Investigation to develop the final Second Interim Remedy. **The ROD should not precede knowledge developed from the results of the investigation. If EPA does not favor this approach, then Honeywell proposes the alternative approach of moving forward with a reconfigured, streamlined plan (Alternative 6 as described on page 2) that implements appropriate elements of EPA's proposed Second Interim Remedy and incorporates the new data into the Third Interim Remedy or the Final Remedy. Alternative 6 will**

[1] *Burlington Northern & Santa Fe Railway Company v. United States*, 129 S. Ct. 1870 (2009).

accomplish EPA's primary objectives and will serve to limit risks of contaminant plume migration.

Whatever approach is taken, Honeywell also recommends a performance-based ROD so that many of the issues raised in this letter can be addressed during the remedy design phase. A performance-based ROD could focus on the expected outcome rather than the details of the remedial action. For example, the ROD could state that:

- Groundwater extraction wells should be designed to inhibit the horizontal and vertical extent of contaminant migration in groundwater from highly contaminated areas, specifically areas of the plume where total VOCs exceed 50 µg/L and hexavalent chromium exceeds 5 µg/L;

- Groundwater extraction systems should be designed to prevent migration of contaminants in groundwater towards the Rinaldi-Toluca and Hollywood West production wells;

- Drinking water standards should be met in the treated water from the NHOU Central Treatment Facility; and

- Actual costs will vary depending upon the details of the remedy determined during remedial design.

The ROD could state that the exact number, location, and pumping rates for the groundwater extraction wells and the components of the wellhead treatment and NHOU Central Treatment Facility will be determined during remedial design. Results of the ongoing investigation will provide data to better understand where extraction wells may be optimally-situated and the most effective flow rates and hydraulic capture scenarios. Since the flows and loads entering the NHOU Central Treatment Facility will be a function of the aforementioned extraction wells and pumping regime, the treatment train can only be further evaluated at that time.

The remainder of this letter presents specific comments pertaining to the FFS document by section number.

DETAILED COMMENTS

FFS Section 1 – Introduction

FFS Section 1.1 – Focused Feasibility Study Purpose and Overview

The last paragraph of this section states EPA's objective:

> *. . . to ensure the groundwater cleanup achieved by the Second Interim Remedy is sustained over the long term, by working closely with the state to pursue effective and timely remediation of contaminant source areas at individual facilities within the NHOU. This includes controlling contaminant sources that occur above, at, or below the water table to maximize the ability of the Second Interim Remedy to contribute to long-term remediation of groundwater.*

Moving forward with the Second Interim Remedy without the benefit of additional data regarding specific potential sources within the NHOU may impede the ability to control contamination at its source. The absence of source information will make it difficult for the state to pursue source control actions and for PRPs to determine the amounts they might be willing to pay to settle their liability. Furthermore, the proposed Second Interim Remedy may complicate source remediation efforts by changing aquifer hydraulics and plume contaminant distributions.

FFS Section 1.2.2 – Site History

As stated in a July 17, 2009 letter from Honeywell to Frederick Schauffler, the FFS states or implies that Honeywell owns or operates the former Bendix facility. For example, in the second paragraph in the section entitled "Depth Region 1" on page ES-3, the text reads:

> *An areas [sic] of particularly high TCE concentrations ... is centered near the southern boundary of the* ***Honeywell*** *facility. The peak TCE concentration detected recently at the* ***Honeywell*** *facility was . . . . .* (emphasis added).

In fact, doing a quick search of the portable document format (PDF) file the term "Honeywell facility" appears over 30 times in the text of the FFS. This term is factually incorrect. The facility at 11600 Sherman Way, North Hollywood, California, is not owned or operated by Honeywell International, Inc. The correct site history is as follows:

> From 1941 to 1983, the Site was owned and operated by Bendix Corporation. Allied Corporation acquired Bendix Corporation in 1983. In 1985, Allied Corporation combined with the Signal Companies to form AlliedSignal, Inc. The principal operations at the Site were manufacturing of hydraulic and pneumatic valves, painting and plating processes. The operation remained the same until AlliedSignal, Inc. ceased operations in 1992. The Site buildings were razed in 1993. The property has since been subdivided and redeveloped into three separate parcels. The western-most parcel was sold to Kaiser Permanente (Kaiser Property) and the eastern-most parcel (Eastern Parcel) was sold to Home Depot. The middle property, referred to as the "Western Parcel," was sold to Public Storage, Inc. The last real property transfer occurred in 1997. In 1999, AlliedSignal, Inc. merged with Honeywell, Inc., and the new company became known as Honeywell International Inc."

Based on these facts, the following points should be recognized:

- Honeywell International Inc. does not currently own or operate the former Bendix facility.
- However, as a result of the Bendix-Allied merger, and the subsequent AlliedSignal, Inc.–Honeywell, Inc. merger, Honeywell International Inc., as corporate successor, assumed liability for contamination at the Site caused by the predecessor owners and operators of the Site.

The correct term for the facility is "former Bendix facility." These references should be corrected in the FFS and in future documents or presentations so that the Site is referred to as the "former Bendix facility," and when Honeywell's role is described, that it be made clear that Honeywell is the corporate successor to the previous Site owners and operators, Bendix Corporation and AlliedSignal, Inc.

The Chronology of North Hollywood Operable Unit Events (Table 1-1) should include key dates for significant milestones and events, such as:

- Commencement of Rinaldi-Toluca well field operations;
- Removal of NHE-5 from service due to groundwater elevation;
- Removal of NHE-4 from service due to groundwater elevation;
- Groundwater plume containment at the former Bendix facility as part of the on-site treatment system; and
- NHE-2 wellhead treatment and off-site plume containment.

Furthermore, the text should note that extraction Well NHE-1 was not started with the start of the NHOU extraction and treatment system, and that the well has never operated.

Per the text, the plume maps (Figures 1-3 to 1-7) are based on 2007 data, where available, and historical data where few recent data are available. The plume to the northwest of the NHOU Central Treatment Facility in Figure 1-3 indicates trichloroethene (TCE) concentrations exceeding 100 µg/L. This data is not presented in either Figure 2-3 or Appendix A – Summary of Recent Analytical Data (January 2003 through December 2007). The source of this data should be provided or the plume maps refined.

FFS Section 1.3 – Groundwater Remedial Activities

FFS Section 1.3.2 – In-Situ Chromium Treatment at Honeywell Facility

Figure 1-8 of the In-Situ Chromium Treatment is not correct. A marked-up copy is attached (***Attachment 5***).

FFS Section 1.4 – NHOU Chromium Evaluation

FFS Section 1.5 – Summary of Risks from Contaminated Groundwater

Per the fourth paragraph of this section, it is noted that recent peak concentrations of total chromium have exceeded the California maximum contaminant level (MCL) by a factor of nearly 1000 (50 µg/L x 1000 = 50,000). These peak concentrations were present in fourth quarter 2006 under the former Bendix facility when the groundwater elevation was higher than it had been since prior to 2000. As presented in the *Groundwater Monitoring Report, Second Quarter 2009, Honeywell North Hollywood Site,* the maximum detected hexavalent chromium concentration in groundwater at the Site is 1,500 µg/L, not 50,000 µg/L. As noted in Section 1.3.2, the In-Situ Chromium Treatment facility at the former Bendix site, which is currently in operation will continue to reduce hexavalent chromium at the Site and dramatically decreases the potential risk to human health through the ingestion and inhalation exposure pathways.

FFS Section 2 – Data Evaluation

FFS Section 2.3 – Hydrogeologic Conditions

The FFS incorrectly states that groundwater flow velocities are greatest where hydraulic conductivities are highest (p. 2-5). In fact, groundwater velocities are a function of both the hydraulic gradient and hydraulic conductivity. Hydraulic gradients within much of the NHOU area are relatively flat.

Section 2.3 of the FFS does not acknowledge any uncertainty in the hydrogeologic conceptual model of the NHOU area, nor does it anticipate potential improvements in the hydrogeologic conceptual model as a result of new data obtained from the 33 groundwater monitoring wells. These data may significantly alter the conceptual model and improve the predictive capability of groundwater modeling.

FFS Sections 2.4 and 2.5 – VOC and Chromium Concentrations in Groundwater

Section 2.4 presents maps that essentially envelope historical maximum contaminant concentrations. These maps are relatively unbiased and reproduce interpreted plume geometries where available data are adequately distributed. However, envelopes of historical maximum concentrations may be misleading in areas of sparse data. For example, an envelope of maximum TCE and tetrachloroethene (PCE) concentrations detected in Depth Regions 2 through 4 southwest of the former Bendix facility (Figure 2-3) is oriented contrary to the known influence of local and regional gradients. As such, the delineated areas may be misleading with regard to the placement of additional monitoring wells and areas targeted for remediation.

An additional example where the envelope of the maximum concentrations of chromium is interpreted without validation is the extent of the 5 µg/L plume to the west, and southwest of the former Bendix facility in Figure 2-4. Data is not currently available supporting that contour; however, adequate information is being obtained as part of the on-going 33 NHOU groundwater monitoring well installation.

Additionally, the FFS's distinction between shallow and deep contaminated zones may be misleading in areas where Depth Region 1 is periodically dry. In these areas, plotted values for Depth Region 2 may represent the top of the saturated zone at the time of sampling, rather than evidence of downward contaminant migration.

Figure 2-2, Maximum Concentration of TCE and PCE in Groundwater Depth Region 1 does not match up with the TCE Plume map presented in Figure 1-3. If the data reported in Figure 1-3 is within the January 2003 to December 2007 data set for Figure 2-2, any discrepancies between the two figures should be resolved. If the data represented in Figure

1-3 is not within that time-frame, the notes in Figure 1-3 should define the data set used for the figure and the data should be provided.

FFS Section 2.6 – Emerging Chemicals

The introduction to this section acknowledges that the known distribution of emerging contaminants is skewed to the few sites that have complied with regulatory requests for additional investigation and monitoring. The available data are technically insufficient for remedy selection. Given concerns associated with emerging contaminants, the extent of these constituents should be properly evaluated prior to remedy selection. For example, data obtained from the 33 newly-installed NHOU groundwater monitoring wells could confirm that 1,4-dioxane is intermittently present in NHOU groundwater across widespread areas of the VOC plume at concentrations ranging from 3 µg/L to 10 µg/L. Such findings would fundamentally alter the assumptions regarding 1,4-dioxane treatment. For example, depending on the spatial variation, frequency, and concentration ranges of 1,4-dioxane in groundwater, the remedy could range from no 1,4-dioxane treatment to the addition of 1,4-dioxane treatment at the NHOU Central Treatment facility. In order to spend remedial money wisely, these issues need to be understood before a 1,4-dioxane remedy is deployed.

It should be noted that there are discrepancies between the EPA database and the data presented in the FFS. The following examples include 1,4-dioxane concentrations that are presented in the database but are not discussed in Section 2.6.2 or presented in Appendix A:

Detected Concentration	Monitoring Well	Sampling Date
20 µg/L	NH-C01-324	3/14/07
20 µg/L	NH-C02-325	3/12/07
20 µg/L	NH-VPB-02	3/12/07
20 µg/L	NH-VPB-05	3/12/07
20 µg/L	NH-VPB-06	3/12/07
100 µg/L	NH-C05-460	3/14/07
100 µg/L	NH-C06-285	3/13/07

The concentrations and dates suggest the data may be subject to further scrutiny and the FFS should not exclude it without explanation. This is an important issue because the FFS currently focuses on 1,4-dioxane only in the vicinity of extraction well NHE-2 and the data above suggest that 1,4-dioxane concentrations could be more widespread within the NHOU. This is another reason why source identification is so important. It is entirely possible that an important source, or sources, of 1,4-dioxane exist, which could significantly impact remedy selection.

FFS Section 2.7 – Summary of Data Needs and Recommended Additional Monitoring Wells

In summarizing the rationale for additional monitoring wells (p. 2-13), the first bullet should be revised as follows:

> Adequately characterize the lateral and vertical extent of contaminant plumes and known hotspot areas and their relationship to known *and potential* source areas.

The logic behind the labeling and grouping of EPA's proposed additional monitoring wells is unclear (Figure 2-14). The rationale provided in Table 2-1 for each proposed cluster of monitoring wells consists largely of redundant verbiage and lacks adequate detailed explanations. The FFS should link each proposed well to one or more upcoming critical decisions and describe how the information obtained from these wells will successfully contribute to the decision-making process (i.e., USEPA's Data Quality Objectives process).

Detailed comments on the proposed monitoring wells are as follows:

- Location A: The well proposed at Location A is intended to define the hydraulic gradient between the Rinaldi-Toluca well field and the former Bendix facility. Because there will be groundwater depressions around each of the pumping systems, at least two wells will be necessary to understand the hydraulic gradient and whether a hydraulic divide already exists.

- Location C: The rationale for installing four monitoring wells east of Vineland Avenue and Vanowen Street warrants further discussion. Existing wells 3830Q and 3830S may negate the need for at least one of these monitoring wells.

Furthermore, this section should address the 33 new groundwater monitoring wells and ongoing investigation activities that Honeywell has proactively agreed to complete under the AOC. These new wells should also be addressed in Sections 4.2.2 and 4.3.1.2. The resultant data from these wells should be considered in the analysis and evaluation of the Second Interim Remedy.

FFS Section 3 – Development of Preliminary Cleanup Goals

FFS Section 3.1 – Remedial Action Objectives

The proposed Remedial Action Objective (RAO) includes "improved hydraulic containment to inhibit the horizontal and vertical contaminant migration." This is an important RAO as it solidifies the need to optimize well locations and appropriate depths to achieve that objective. Additional groundwater characterization data, which is currently being collected, is necessary to determine which wells should be deepened, or whether it is more appropriate to install a new well, perhaps along the axis of plumes rather than deepening existing wells.

The final paragraph of this section states that:

> *Additional data obtained during design and implementation of the Second Interim Remedy will improve EPA's ability to determine the nature of a final remedy for the NHOU. EPA's decision to propose a Second Interim Remedy, rather than continue with the existing remedy until additional data are available to develop a final remedy, is consistent with the National Contingency Plan (NCP). Groundwater in the NHOU is known to be migrating into less contaminated portions of the aquifer because of the Existing NHOU Extraction and Treatment System's failure to completely capture the targeted plume. Delaying action could result in the following:*
>
> - *continued contaminant migration, necessitating additional treatment, increasing costs, and complicating the operation of existing or planned treatment facilities;*
> - *increased likelihood that additional water supply wells in the SFV would have to be modified, removed from service, or operated intermittently, or that groundwater produced by additional wells would require treatment to remove contaminants; and*
> - *increased cost, difficulty, and time required for containment of contaminant plumes or restoration of the aquifer because continued contaminant migration would increase the volume, contaminant concentrations, and potential constituents of concern in that contaminated groundwater.*

While Honeywell agrees that a significant delay in action could result in the complicating factor described above, we strongly urge EPA to consider the data from the 33 groundwater monitoring wells currently being installed in the remedy selection and ROD process. These data will be available in the first quarter of 2010 and, therefore, will not significantly delay the process. Using these data, combined with a flexible ROD, will allow the process of remedy implementation to move forward more quickly. **Moving forward with a remedy in the absence of critical data could also result in complicating factors described above (exacerbation of contaminant plume migration, unanticipated production well shutdown, increased cost and time for aquifer remediation, and delay in the beneficial use of groundwater resources).** It is for that reason that Honeywell has voluntarily moved forward with the installation of the 33 groundwater monitoring wells. If EPA does not favor deferring the Second Interim Remedy, Honeywell I proposes the alternative approach of moving forward with a reconfigured plan (Alternative 6 as outlined on page 2) that implements appropriate elements of the Second Interim Remedy and incorporates the new data into the Third Interim or the Final Remedy.

FFS Section 3.2 -- ARARs

LADWP's Voluntary Cleanup Standard for Hexavalent Chromium Should Not Be Considered To Be An ARAR.

For contaminants with established MCLs, EPA proposes to use the federal and state drinking water MCLs as cleanup levels for treated groundwater. Because an MCL does not presently exist for hexavalent chromium (although an MCL may be established within the next several years), LADWP will accept a voluntary cleanup level of 5 µg/L for hexavalent chromium in its drinking water supply system. As stated in its Proposed Plan for the NHOU, EPA proposes to use LADWP's voluntary cleanup level as EPA's cleanup level for hexavalent chromium in treated groundwater.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. § 9601 *et seq.*) provides that any contamination that will remain on-site must attain

> . . . any *promulgated* standard, requirement, criteria, or limitation under a State environmental or facility siting law that is more stringent than any Federal standard, requirement, criteria, or limitation . . .

and that "is legally applicable to the hazardous substance or pollutant or contaminant concerned or is relevant and appropriate under the circumstances" (24 U.S.C. § 9621[d][2][A][ii]). The "voluntary" 5 µg/L standard noted by EPA has not been promulgated by LADWP and was never the subject of public notice-and-comment rulemaking. In fact, it appears that it has not even been written down as a policy guideline or memorandum. In addition, it has not been the subject of peer-reviewed science or analysis. As such, it has no standing to be considered an ARAR. Because LADWP's voluntary cleanup level is neither "applicable" nor "relevant and appropriate," and because it was never promulgated by the LADWP, consideration of it as an ARAR would be inappropriate.

LADWP's Voluntary Cleanup Level Would Not Be "Applicable."

"Applicable" requirements are

> . . . those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations *promulgated* under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. (USEPA, *CERCLA Compliance with Other Laws Manual* [CERCLA Manual], at pp. 1-10, available at http://www.epa.gov/ superfund/policy/remedy/pdfs/540g-89006-s.pdf [Aug. 8, 1988]) (See also 40 Code of Federal Regulations [CFR] § 300.400[g][1].)

LADWP's voluntary cleanup level, which relates generally to the concentration of hexavalent chromium in drinking water that LADWP will accept for use in its drinking water supply system, would not specifically address circumstances at NHOU, which is a CERCLA site. Accordingly, the voluntary cleanup level would not be "applicable," and thus should not be considered an ARAR.

In addition, only Federal or State standards that are "promulgated," meaning that they "are of general applicability and are legally enforceable," may be considered to be "applicable" (*Id.* § 300.400[g][4]). LADWP's voluntary cleanup standard was referenced by LADWP, but never adopted or even reduced to writing, and, thus, should be considered not "applicable." Furthermore, as a voluntary cleanup level, the standard is not a mandatory or legally enforceable regulation, which provides another basis on which it should be considered not "applicable" and, thus, not an ARAR.

LADWP's Voluntary Cleanup Level Would Not Be "Relevant and Appropriate."

If a requirement is not "applicable" to a CERCLA site, the requirement could still be an ARAR if it is "relevant and appropriate to the circumstances of the release" (*Id.* § 300.400[g][2]).

"Relevant and appropriate" requirements are

> . . . those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. (CERCLA Manual at pp. 1-10) (See also 40 CFR § 300.400[g][2].)

EPA must evaluate eight factors, including the purposes of the requirement as well as the CERCLA action and the medium, substances, and actions affected thereby, to determine whether a requirement may be "relevant and appropriate" (See also *Id.* § 300.400[g][2].)

Similar to ARARs designated on the basis of being "applicable," a requirement must be "promulgated" or "of general applicability" and "legally enforceable" in order to be "relevant and appropriate" (*Id.* § 300.400[g][4]). As discussed above, LADWP's voluntary cleanup level is not legally enforceable, as it is a voluntary standard. As also discussed above, it is not promulgated pursuant to State or Federal law, as it was established by the City. Thus, the voluntary cleanup level should not be considered to be "relevant and appropriate" because it is not a mandatory requirement pursuant to State or Federal law and, accordingly, cannot be designated as an ARAR.

A Public Health Goal (PHG) for Hexavalent Chromium Should Not Be Considered To Be An ARAR.

The Office of Environmental Health Hazard Assessment (OEHHA) recently released a draft PHG for hexavalent chromium in drinking water on August 20, 2009. (At the time of release of the FFS in July 2009, OEHHA was preparing the draft PHG for hexavalent chromium, as recognized in the FFS.) The Calderon-Sher Safe Drinking Water Act of 1996 (SDWA) (California Health & Safety Code [Health and Safety Code] § 116270 *et seq.*) requires OEHHA to develop PHGs for certain constituents in drinking water supplies to ensure that drinking water meets certain standards (See *Id.* § 116365[c][1]). A PHG is the estimated level of a chemical contaminant in drinking water "that is not anticipated to cause or contribute to adverse health effects, or that does not pose any significant risk to health" (*Id.* § 116365[c][1]). (See also *Id.* § 116275[z].) OEHHA must set a PHG "based exclusively on public health considerations"; technological and economic feasibility are not considered (*Id.* § 116365[c][1]).

After promulgation of a final PHG, the California Department of Public Health (CDPH) would adopt an MCL for hexavalent chromium. CDPH must "consider" the PHG when adopting primary drinking water standards (*Id.* § 116365[b][1]), and must set such standards "at a level that is as close as feasible to the corresponding [PHG] placing primary emphasis on the protection of public health" (*Id.* §116365[a]). CDPH also must consider "[t]he technological and economic feasibility of compliance with the proposed primary drinking water standard" (*Id.* § 116365[b][3]), which OEHHA cannot do when setting a PHG (*Id.* § 116365[c][1]).

Because EPA generally considers MCLs to be "relevant and appropriate" standards, and thus ARARs for purposes of CERCLA, a forthcoming MCL for hexavalent chromium, to be adopted by CDPH after the PHG becomes final, likely would be considered an ARAR. Although EPA does not propose in the FFS that the PHG should be considered an ARAR, we wish to emphasize that such a consideration would be inappropriate, as the PHG would be neither "applicable" nor "relevant and appropriate."

A Hexavalent Chromium PHG Would Not Be "Applicable."

As stated above, "applicable" requirements are

> . . . those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. (CERCLA Manual at pp. 1-10) (See *also* 40 CFR § 300.400[g][1].)

The forthcoming PHG, an estimated level of hexavalent chromium in drinking water that avoids human health risk, would not specifically address circumstances at the NHOU, a CERCLA site. Accordingly, the PHG would not be "applicable" and thus should not be considered an ARAR on this basis.

In addition, a PHG is not a state standard that is "promulgated," or "of general applicability" and "legally enforceable," as required to be "applicable" (*Id.* § 300.400[g][4]). Even in final form, PHGs are not mandatory or legally enforceable regulations; that is, neither OEHHA nor CDPH shall "impose any mandate on a public water system that requires the public water system to comply with a [PHG]" (Health and Safety Code § 116365[c][2]). The non-mandatory nature of PHGs is emphasized in PHG technical support documents. (See OEHHA's *Draft Public Health Goal for Hexavalent Chromium in Drinking Water* [*Hexavalent Chromium PHG*], at iii, available at http://www.oehha.ca.gov/water/phg/pdf/Cr6PHGdraft082009.pdf [Aug. 2009].) The *Hexavalent Chromium PHG states:* "PHGs are not regulatory requirements, but instead represent non-mandatory goals." Because "PHGs are developed for use by [CDPH] in establishing [MCLs] . . . PHGs are not developed as target levels for cleanup of ground or ambient surface water contamination" (*Id.*). As such, PHGs "may not be applicable for such [remediation] purposes, given the regulatory mandates of other environmental programs" (*Id.*). Because a PHG is not legally enforceable, this provides another basis on which the PHG should be considered not "applicable," and thus not an ARAR.

A Hexavalent Chromium PHG Would Not Be "Relevant and Appropriate."

As discussed above, a requirement that is not "applicable" to a CERCLA site could still be an ARAR if it is "relevant and appropriate to the circumstances of the release" (40 CFR § 300.400[g][2]). "Relevant and appropriate" requirements are

> . . . those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. (CERCLA Manual at pp. 1-10) (See also 40 CFR § 300.400[g][2].)

In addition, a PHG is not a state standard that is "promulgated" (i.e., it is not "of general applicability" or "legally enforceable," as required to be "relevant and appropriate."). (*Id.* § 300.400[g][4]). A PHG is not legally enforceable, as state law prohibits OEHHA and CPDH from requiring compliance by the public water systems to which the PHG is applicable. (See Health and Safety Code § 116365[c][2]). OEHHA recognizes that "PHGs are not regulatory requirements" but are "non-mandatory goals" (Hexavalent Chromium PHG at iii). The PHG should not be considered to be "relevant and appropriate" because it is not a mandatory requirement and, accordingly, cannot be designated as an ARAR.

Use of Data Underlying a Forthcoming Draft PHG to Establish Cleanup Standards at a Superfund Site Would Be Improper.

When setting a PHG, OEHHA must prepare a risk assessment "using the most current principles, practices, and methods used by public health professionals who are experienced practitioners in the fields of epidemiology, risk assessment, and toxicology" (*Id.* § 116365[c][1]). Using the information gathered from the risk assessment, OEHHA then prepares a draft PHG, calculated at a level that "would not cause significant adverse health effects in people who drink water every day for 70 years" (See OEHHA's *Guide to Public Health Goals [PHGs] for Chemicals in Drinking Water* [*Guide to PHGs*], at 2, available at http://www.documents.dgs.ca.gov/bsc/pex/csbm%20ex3.pdf [Oct. 2003]). The draft PHG is set at a level that "provides protection against any known cancer and "non-cancer" health effects associated with exposure to the chemical in question" (*Id.*).

OEHHA must make a draft risk assessment and associated draft PHG available for public review (Health and Safety Code § 116365[c][3][B]). OEHHA generally posts the documents to its website (*see* Guide to PHGs at 3), and must make them available to the public for at least 45 calendar days prior to a public workshop it is required to hold for "public comment and discussion on the risk assessment" (Health and Safety Code § 116365[c][3][B] and § 57003[a]). The goal of the public workshop is "to encourage a constructive dialogue between the scientists employed by [OEHHA] that prepared the proposed [health risk assessment and PHG] and scientists not employed by [OEHHA]," as well as "to evaluate the degree to which the proposed [health risk assessment and PHG] are based on sound scientific methods, knowledge, and practice" (*Id.* § 57003[a]).

Following the workshop, OEHHA must revise the proposed health risk assessment and PHG guidelines, as appropriate, and circulate it for public comment for at least 30 days (*Id.* § 57003[a]). At the time that OEHHA publishes the final risk assessment and PHG, it must "respond in writing to significant comments, data, studies, or other written information submitted by interested persons to the office in connection with the preparation of the risk assessment" (*Id.* § 116365[c][3][C]). In addition, it is possible that a draft PHG may undergo external scientific peer review. Upon request by an interested person for such review, OEHHA must delay adoption of a final PHG. Within 15 calendar days following the date of completion of the public workshop, "[a]ny interested persons may request [OEHHA] to submit the risk assessment to external scientific peer review prior to its publication" (*Id.* § 116365[c][3][C]).

The interpretation of data or assumptions contained in the draft health risk assessment and associated draft PHG should not be used or relied on as a recommendation or guidance until a final document is formally approved and published by OEHHA. The draft risk assessment and associated draft PHG are likely to contain unresolved technical issues that are still open to discussion, including public comment and workshop and external scientific peer review, and could be revised in light of new data. After public input and potential external scientific peer review, the numerical value of the draft PHG could change, as could the underlying data or assumptions.

In addition, use of the data in OEHHA's draft health risk assessment would be inappropriate because EPA is performing an assessment of the human health risk from oral ingestion of hexavalent chromium pursuant to its Integrated Risk Information System (IRIS) program. Assessments performed pursuant to IRIS undergo a rigorous, centralized, transparent, consensus-oriented review process, including external peer review by national experts such as those on EPA's Science Advisory Board or the National Academy of Sciences. Given the differences between OEHHA's health risk assessment and PHG process and EPA's process, different results could be achieved, creating inconsistencies in the future.

Furthermore, IRIS assessments are specifically designed to provide EPA with scientific support for its risk management decisions and with specific values for "to-be-considered" criteria, which may be considered along with ARARs in determining the necessary cleanup level for protection of health or the environment (See 40 CFR § 300.400[g][3]).

> The "to be considered" (TBC) category consists of advisories, criteria, or guidance that were developed by USEPA, other federal agencies, or states that may be useful in developing CERCLA remedies. (CERCLA Manual at xiv, pp. 1-76)

EPA's IRIS assessment of hexavalent chromium is thus likely to be more appropriate for EPA reliance than OEHHA's draft health risk assessment associated with a draft PHG. While the hexavalent chromium assessment is expected to be completed in 2011, reliance on a draft health risk assessment and associated draft PHG prepared by OEHHA remains inappropriate in the interim for the reasons stated above.

Therefore, EPA should not rely on the risk assessment or data therein used to support a proposed PHG in establishing cleanup standards.

FFS Section 3.3 – Preliminary Cleanup Goals

As discussed above, the CDPH drinking water notification levels for 1,4-dioxane are not an ARAR. Furthermore, the voluntary cleanup level adopted by LADWP for hexavalent chromium for water it will accept for use in its water supply system is not an ARAR and its basis should be further understood. Instead, these limits should be considered during the selection and evaluation of the target cleanup areas and remedial alternatives, but should not be driving factors in the remedial alternatives selection and design criteria processes. Cleanup goals need to balance toxicological risk with water purveyor needs, considering the appropriate point of compliance and the use of blending when appropriate.

The FFS does not state the point of compliance with the cleanup levels. The third paragraph in this section indirectly states that drinking water standards should not be exceeded in the treated water from the NHOU treatment system. We assume that wellhead treatment systems will need to reduce contaminant levels to allow for drinking water standards to be met at the NHOU treatment system.

FFS Section 4 – Development and Description of Remedial Alternatives

FFS Section 4.1 and 4.2 – Existing NHOU Extraction and Treatment System and Evaluation of Remedial Technologies and Process Options

As noted on page 4-1, the existing NHOU Extraction and Treatment System was designed to contain the groundwater plume in the most significantly contaminated portions of the NHOU, which are primarily located in groundwater Depth Region 1. As noted in the September 2008 5-Year Review document, one of the factors that has prevented the NHOU extraction and treatment system from completely inhibiting contaminant migration was the construction of the Rinaldi-Toluca water supply well field in North Hollywood and the Tujunga well field immediately to the north in Pacoima. Since the production wells in these well fields withdraw the groundwater primarily from deeper aquifer zones, the operation of these two well fields has contributed to the regional groundwater level drawdown that extends to the NHOU extraction wells and the inability of the NHOU extraction system to achieve designed extraction rates.

Recognizing this issue, the FFS recommends in Section 4.2.1 that a Groundwater Management Plan between EPA and LADWP should be in place to mitigate the potential negative impacts to NHOU system performance that could result from unexpected groundwater withdrawal by LADWP. Because there is no data showing chromium levels in this area, the installation of three very expensive deep NEW wells appears to be more of a water supply strategy than a remedial action. Costs that are principally for water supply or provision of municipal services cannot be passed to PRPs as part of a putative "remedy"; they remain the responsibility of the water supply agency or municipality. (See, City of Moses Lake v. United States, 458 F. Supp. 2nd 1198 (E.D. Wash. 2006); *Santa Clara Valley Water District v. Olin Corp.,* N.D. Cal., No. 07-3756, 2009 WL 2581290 Aug. 19, 2009.) The municipalities need to fund their own water supply well infrastructure. They also have a responsibility not to exacerbate pre-existing conditions and to manage their pumping programs to minimize contaminant migration.

Given the location of the Rinaldi-Toluca well field and the Tujunga well field, the operation of these wells could have exacerbated migration of contaminants to the deeper zone. Considering this, data from the ongoing groundwater investigation and groundwater modeling should be utilized in conjunction with negotiation of the Groundwater Management Plan to reevaluate and design the components of the Second Interim Remedy. Agreement on the operating parameters in the Groundwater Management Plan need to be established early on so that boundary conditions for production well pumping are known.

4.2.3 – Plume Containment

Honeywell agrees with the objective to have *"extraction wells pump from the most highly contaminated portions of the aquifer"*; however, the appropriate locations and depths for those extraction wells should consider the information and data obtained from the 33 NHOU groundwater monitoring wells.

Section 4.2.3.1 – Target Volume Development

The FFS presents areas of contaminated groundwater that are targeted for hydraulic containment, referred to as "target volumes." These target volumes are based on maximum detected concentrations from monitoring data collected between 2003 and 2007. The target volumes will need to be remapped after the data from the 33 NHOU groundwater monitoring wells are obtained, which may significantly alter supportive assumptions and the remedy.

For example, the attached figure illustrates 1,4-dioxane concentrations in groundwater around the former Bendix facility (***Attachment 6***). The figure shows the most recent groundwater sampling results, including results from newly-installed well NH-C07 (U1-1). Upgradient 1,4-dioxane concentrations range from 3.5 µg/L in GW-9 to 7.4 µg/L in GW-6. With the exception of one location (11 µg/L of 1,4-dioxane at GW-12A), downgradient concentrations are similar to upgradient concentrations. The groundwater analytical results from soon-to-be-installed well T2-1 will provide additional information on the distribution of 1,4-dioxane in the area. The results may indicate that 1,4-dioxane at concentrations of 3 µg/L to 10 µg/L may be present intermittently throughout much of the VOC plume. This is very different than the 1,4-dioxane plume presented in Figure 2-8 of the FFS. If 1,4-dioxane is present intermittently throughout much of the VOC plume at these levels, wellhead treatment for 1,4-dioxane at NHE-2 may not be an appropriate remedy. Depending on the spatial variation, frequency, and concentration ranges of the 1,4-dioxane in groundwater, the remedy could range from no 1,4-dioxane treatment to the addition of 1,4-dioxane treatment at the NHOU Central Treatment Facility.

Section 4.2.5 - Chromium Treatment

Summary Table 4.3 for the conceptual anion exchange treatment system defines the type of resin proposed as Duolite™ A7, which is a weak based resin. No rationale is presented for proposing a weak based resin versus a strong based resin. We recommend that the FFS does not stipulate a specific resin since selection of the resin is a design issue.

Of note in the American Water Works Association (AWWA) article, *Hexavalent Chromium Removal Using Anion Exchange and Reduction With Coagulation and Filtration* (2007), in a summary of a four-phase research program to identify effective hexavalent chromium removal technologies from drinking water, the City of Glendale study did screen two ion exchange technologies: weak and strong based resin. The weak based resin anion exchange technology as an alternative treatment is still under scrutiny due to possible by-products formation, such as n-Nitrosodimethylamine (NDMA). Results from the pilot testing being performed by the City of Glendale and from the Honeywell on-site treatment (strong based anion resin) should be utilized to select the most appropriate treatment technology for this application. Bench tests conducted by Honeywell using both weak based and strong based resins indicated that NDMA concentrations from the treated effluent of the strong based resin was less than the detection limit. Similarly, the selection of using resin versus using ferrous iron reduction with filtration to treat hexavalent chromium should be made as part of the design process.

Section 4.2.6 - 1,4-Dioxane Treatment

If treatment for 1,4-dioxane is required, other advanced oxidation process (AOP) treatment technologies should be considered and tested. Recent developments in tubular reactor designs for the ozone /hydrogen peroxide process have demonstrated excellent removal of 1,4-dioxane while keeping bromate formation at a minimum. As a result of these improvements, the ozone/hydrogen peroxide combination is a cost competitive alternative to the ultraviolet/hydrogen peroxide treatment for the following reasons:

- The ozone dose required for the ozone/hydrogen peroxide tubular design is about 0.5-1.0 mg/L above the ozone demand of the water, which is relatively low and in the range of the ozone doses used for disinfection.
- The ultraviolet (UV) dose required for the AOP reaction proposed in the FFS is typically 5 to 20 times the dose required for disinfection, which requires considerable amounts of power.

Therefore, the final selection of the AOP, if it is required, would depend on results from bench testing conducted on water samples from NHE-2.

Section 4.3 – Description of Alternatives

Section 4.3.1 – Common Components for All Remedial Alternatives

Section 4.3.1.1 – Institutional Controls

The Groundwater Management Plan proposed by the FFS to mitigate the impact of LADWP production well operation on plume contaminant migration is an essential component of the Institutional Controls. Since the success of the Second Interim Remedy and PRP negotiations will be impacted by that agreement, formalizing the Groundwater Management Plan prior to negotiations to finalize the ROD and Consent Decree would streamline those negotiations and development of the conceptual design.

Section 4.3.1.2 – Groundwater and Treatment System Monitoring

This section describes the groundwater monitoring network being expanded by the installation of approximately 37 additional groundwater monitoring wells. This section should consider the 33 new groundwater monitoring wells and ongoing investigation activities that Honeywell has proactively agreed to complete under the AOC.

Section 4.3.1.3 – Wellhead 1,4-Dioxane Treatment at Extraction Well NHE-2

The 1,4-dioxane data for NHE-2 identified in this section indicates that concentrations have ranged from 4 µg/L to 9 µg/L. Data available to Honeywell indicate that results at NHE-2 have ranged from 2.4 µg/L to 7 µg/L. The maximum detected concentration of 1,4-dioxane identified in Appendix A for the time period January 2003 through December 2007 is also 7 µg/L. Please identify the sample specifics justifying the 9 µg/L maximum or revise the range identified in this section.

The FFS cites that 1,4-dioxane has ranged from 4 µg/L to 7 µg/l between 2007 and 2008. In the first quarter of 2009, the 1,4-dioxane level was 2.4 µg/L. 1,4-dioxane concentrations in the NHE-2 influent have ranged from 2.4 µg/L to 5 µg/L since 2008 and the CDPH Notification Level is 3 µg/L. The marginal detections of 1,4-dioxane above a CDPH Notification Level of 3 µg/L should not immediately trigger the need for an AOP at the NHE-2 wellhead. A broader set of more recent groundwater sampling results, as well as the flow rates from other extraction wells and the NHOU Central Treatment Facility influent concentrations, should be used along with modeling to evaluate the toxicological risk associated with 1,4-dioxane treatment at the NHE-2 wellhead versus no treatment. The results of these analyses, in conjunction with the 97-005 process, should be used to determine the need for treatment.

Section 4.3.1.4 – Chromium Treatment at Extraction Wells

This section states that

> *Chromium treatment will occur for groundwater extracted from well NHE-2 and for other extraction wells where chromium concentrations are expected to be highest.*

After reviewing Section 4.3.4 of the FFS, it appears that an evaluation will need to be conducted to determine which wells require treatment and to what concentrations in order to "decrease total chromium concentrations in the NHOU central treatment plant effluent to 5 ug /L." Cleanup goals need to balance toxicological risk with, consideration of the appropriate point of compliance and the use of blending when appropriate. A broader set of more recent groundwater sampling results from nearby monitoring wells and the concentrations from other extraction wells should be used along with modeling to evaluate the need for treatment.

Note that Honeywell would like the FFS/Proposed Plan to consider evaluating use of the existing equipment at the former Bendix facility for treatment of the chromium from NHE-2. It may be possible to secure access agreements allowing the extracted groundwater to be conveyed to the former Bendix facility where the existing ion exchange vessels could be used for chromium treatment.

Section 4.3.2 - Common Components for "Action" Alternatives 2, 3 and 4
Section 4.3.4.3 – Model Forecast Hydraulic Containment under Alternatives 2a and 2b

Figures 4-15 and 4-16 illustrate simulated flowlines generated from groundwater modeling of the proposed pumping rates for the extraction wells under Alternative 4a (the selected alternative). For forward particle tracking, the flowlines represent the path that will be taken by particles released at specific points at a specified time. However, if the particles are released when the flow field changes substantially, the flowlines will follow different paths. Therefore, in a groundwater basin such as the San Fernando Valley, where pumping from water supply wells changes significantly, flowline information needs to be interpreted with caution. When pumping changes significantly with time, contaminant transport simulation will provide a better interpretation of plume movement because, unlike particle tracking, the entire plume does not instantaneously leave its starting location. A portion of the plume still lingers at the starting location and can react to the changing flow field.

The discussion regarding the maximum production scenario seems to suggest flow from Depth Region 1 (DR-1) at the former Bendix facility to the Rinaldi-Toluca well field. Because DR-1 is likely to be dewatered at the former Bendix facility under this pumping condition, there can be no saturated flow and consequently, no chemical migration in that depth region from the former Bendix facility to the Rinaldi-Toluca well field. There will, however, be flow in DR-2 from the former Bendix facility to the Rinaldi-Toluca well field.

The pumping/flow rates may be overly conservative. The proposed flow rate of over 3,000 gallons per minute (gpm), in combination with the Maximum Pumping Scenario, is likely to dewater DR-1 and, therefore, is not feasible given the Watermaster's safe yield. Balancing regulatory storage requirement/safe yield for the San Fernando Basin versus the Maximum Pumping Scenario used to justify the addition of the three new wells needs to be addressed, along with concerns regarding contaminant plume migration and production well shutdown.

4.3.2.1 Repair and/or Modify Existing Extraction Wells

Extraction well NHE-1 is dry and has never been operational. Deepening NHE-1 requires further evaluation. Since NHE-1 has never operated, the orientation of the plume from the former Bendix facility has been determined by the groundwater flow direction and the extraction rates of LADWP's pumping of the NHOU extraction wells. Rehabilitating NHE-1 may alter this flow direction, causing chromium and VOC migration to the northwest.

If the purpose of the Second Interim Remedy is to contain the high concentration contaminant plumes, it may be premature to deepen NHE-2. Geologic cross-sections provided as ***Attachments 7a and 7b*** (extracted from the *Groundwater Monitoring Report, Second Quarter 2009, Honeywell North Hollywood Site)* indicate that VOCs and hexavalent chromium extend to a depth of approximately 330 feet below ground surface (bgs) and the high concentration portion is above 300 feet bgs. The NHE-2 well is screened between 190 and 300 feet bgs. When vertical flow fields are considered, the wells current configuration may be acceptable to achieve the performance goal. The need for a deeper well may depend upon the lateral extent of the plume and the subsequent pumping rate need for capture. The results of the ongoing NHOU 33 groundwater monitoring well installation should provide the information necessary to make this determination.

NHE-4 has not been operated since February 2008 and NHE-5 has not operated since December 2005. While we recognize that deepening of these wells may be necessary to obtain the desired hydraulic capture for Depth Region 1, the well design must, nevertheless, minimize plume smearing. The well design should either include separate shallow and deep wells, or a packer system in the well to hydraulically isolate the Depth Zones.

To the extent that deepening of these wells is part of a water supply strategy, this is not a 'necessary' remedial measure or response cost under CERCLA. (See, City of Moses Lake v. United States, 458 F. Supp. 2nd 1198 (E.D. Wash. 2006); *Santa Clara Valley Water District v. Olin Corp.,* N.D. Cal., No. 07-3756, 2009 WL 2581290 Aug. 19, 2009.). Costs that are principally for water supply or provision of municipal services cannot be passed to PRPs as part of a putative "remedy"; they remain the responsibility of the water supply agency or municipality.

4.3.2.2 – Construct Three New Extraction Wells

The stated purpose of installing the three NEW wells and deepening of NH-1 wells is to create a hydraulic divide to improve containment of contaminated groundwater southeast of LADWP's Rinaldi-Toluca wells and east of LADWP's North Hollywood West Well Field, and more specifically, to prevent chrome contamination at the former Bendix facility from reaching the Rinaldi-Toluca well fields in the event of an 11-year drought. Currently, there is no groundwater data that demonstrates the potential for elevated chromium in groundwater in this area. NHE-1 has not been tested for total chromium or hexavalent chromium. There is only one monitoring well in this area (NH-VPB-06) which has a chromium concentration of 2.4 µg/L . Production wells along the southeast end of the Rinaldi-Toluca well field have chromium levels of <2 ug/L. Groundwater analytical results will soon be available from proposed monitoring wells NHOU T-1 and T-2, which will provide chromium data and help to ascertain if there is a natural groundwater divide. The cost estimate of $30 million is too significant to commit for a contingency that may or may not happen, and, therefore, is not supportable as an element of the CERCLA interim remedy.

This element of the Second Interim Remedy is wholly premature. After additional data is available, EPA can evaluate whether it makes sense to install these wells. EPA must also consider whether less costly and more permanent and effective remedies, such as management of the pumping regime, are available to deal with the Rinaldi-Toluca issue. We are concerned that the pumping of these wells may result in migration of the contaminant plume from the former Bendix facility towards Rinaldi-Toluca, increasing cleanup time and cost. The issue should be addressed in the Groundwater Management Plan, not in $30 million of hard remedial costs. The Groundwater Management Plan could include monitoring of NHOU T-1 and T-2 as sentinel wells. There will be ample time to evaluate the most cost-effective response if chromium is observed in these production wells.

4.3.2.3 VOC Treatment

The number and size of the air stripping and carbon treatment equipment at the NHOU Central Treatment Facility will need to be re-evaluated once the target cleanup area has been further identified and the location and pumping rates of wells has been determined. It is possible that the design of the Second Interim Remedy will show that only one air stripper and carbon treatment unit will be adequate or that other treatment trains may be necessary (i.e., 1,4-dioxane or chromium treatment).

Section 4.3.6 Alternatives 4a and 4b – Expand Extraction Well System and Operate Ex Situ Chromium Treatment System for Multiple Extraction Wells

As noted in Section 4.3.6,

> *. . . groundwater modeling results indicate that under expected future SFV well field pumping scenarios, new extraction wells NEW-2 and NEW-3 would intercept groundwater containing high concentrations of chromium at levels similar to NHE-1 and NHE-2.*

The proposed remedy, therefore, includes ex situ chromium treatment of the groundwater extracted from NHE-1 and the three NEW wells. As previously discussed, groundwater analytical data have not been collected in the area of these wells, and to assume the need for chromium treatment is premature. Honeywell is currently installing two groundwater monitoring wells (NHOU T-1 and T-2) between the former Bendix facility and the Rinaldi-Toluca well field to obtain water quality information. This component of the remedy should be deferred pending completion of the ongoing investigation. It is premature to propose these new wells and chromium treatment.

FFS Section 5 – Detailed Analysis of Remedial Alternatives

No information is provided on the time required to treat the target volumes employing the proposed alternatives, thus affecting the technologies' lifespan and costs; nor has there been control defined as to the length of the treatment to achieve groundwater quality restoration.

Appendix B – Groundwater Model Development

Section B.2.2 of the FSS states that recalibration of the model was improved by increasing vertical and horizontal hydraulic conductivity by 50%. It is not clear why this was considered appropriate. Before such drastic changes are undertaken, it would seem that the hydrogeologic Conceptual Site Model should be re-evaluated, since. increasing hydraulic conductivity significantly affects flow rates. Discrepancies in the calibration of the numerical model, as shown on Figure 7 of Appendix B of the FFS, may be caused by the use of inaccurate hydraulic parameters, such as hydraulic conductivity (see Figures 3, 4, 5 and 6), effective porosity, storage coefficient, anisotropy, and dispersivities. Spatial variability of hydraulic parameters should be treated geostatistically to determine expected values, spatial correlation, and estimated uncertainties. Once the ongoing NHOU groundwater characterization activities have been completed, the groundwater model should be recalibrated and sensitivity analyses conducted to refine the number, location, and pumping rates of the extraction wells.

Appendix D – Cost Estimates

In the comparison spreadsheet of EPA's alternative vs. Honeywell's proposed alternative for 1-4 dioxane treatment, the capital cost and operations and maintenance (O&M) cost are the same. However, while calculating the net present value (NPV) for 26 years at 7%, there is a discrepancy between EPA's and our calculations. The NPV for Honeywell's alternative was calculated using the following formula:

PV(0.07,26,H24,0,0)+G24

where:

H 24 = O&M cost
G 24 = capital cost.

Even though Honeywell's approach is the same as EPA's, Honeywell's NPV 7% value, based on the formula above, is $5.7 million vs. EPA's value of $4.7 million. Please verify the basis for EPA's calculation. Also, note that in ***Attachment 2*** of this letter, we did not change the NPV for EPA's alternative.

Appendix E – Facility Data Summary

Appendix E of the FFS and Figure 2-1 both identified selected "Facility Locations" (i.e., potential sources). The listed locations tend to be sites where a known release has occurred (i.e., soil or groundwater data exists confirming a release) but the list appears to be incomplete. Lockheed Building 528 and Hangar 22 are not mentioned. Also, several of the smaller degreaser/plating operations identified by MWH Americas, Inc. (MWH) were not included (i.e., Skipower Plating, AAA Plating, Caravan Fashions, F&H Plating, Nickel Solutions Recycling, Electromatic, etc.). Honeywell has also identified other entities that are known to have impacted the subsurface. These entities are provided in ***Attachment 4***.

Closing

Honeywell recommends that selection of a Second Interim Remedy be deferred until the groundwater investigation results are available for consideration. If EPA does not favor that approach, we strongly urge the agency to evaluate and implement Alternative 6 as a more cost-effective, technically supportable, and less risky interim remedy. Moreover, any ROD that is issued must be sufficiently flexible and performance-based to allow for incorporation of the additional data that is forthcoming. This would result in a refined remedy that will minimize contaminant plume migration, minimize the risk of unanticipated production well shutdown, and maximize beneficial groundwater use. Consideration of additional source information before selection of a Second Interim Remedy would also lead to a more cost-effective remedy and would facilitate settlement by other PRPs. Furthermore, EPA's decision-making process will not be constrained by the appearance that it is making an “about-face” if the selected remedy is ultimately not suitable, based on the results of the groundwater investigation.

The on-going investigation activities that Honeywell has proactively agreed to complete under the AOC will produce additional data by the first quarter of 2010. Honeywell would like to reserve the right to provide additional comments on the FFS based on the pending new data.

If you have any questions, please contact Benny DeHghi at (310) 512-2296.

Sincerely yours,

Honeywell International Inc.

Benny Dehghi
Manager, Remediation & Evaluation Services

cc: Fred Schauffler
Kelly Manheimer
Michael Massey
Gene Lucero
Donald Walsh

Attachment 1
Comparison of Alternatives to the Nine CERCLA Evaluation Criteria

Evaluation Criteria	ALTERNATIVES					
	1a Existing Remedy	2A and 2b Expand Extraction Well System plus Chromium Wellhead Treatment at Wells NHE-1 & NHE-2	3a and 3b Expand Extraction Well System plus Chromium Treatment for Combined Flow from Wells NHE-1 & NHE-2	4a and 4b Expand Extraction Well System plus Ex Situ Chromium Treatment for Wells NHE-1 & 2 and NEW-2 & 3	5a and 5b Expand Extraction Well System plus Ex Situ Chromium Treatment for all Extraction Wells	6 Refurbish Extraction Well System plus wellhead treatment at NHE-2
Protection of Human Health & the Environment	O	⊕	⊕	●	●	●
Compliance with Applicable or Relevant and Appropriate Requirements	●	●	●	●	●	●
Long-term Effectiveness & Permanence	O	⊕	⊕	●	●	●
Reduction of Toxicity, Mobility, or Volume Through Treatment	O	⊕	⊕	●	●	●
Short-term Effectiveness	●	●	●	●	●	●
Implementability	O	⊕	⊕	●	⊕	●
Cost: Option "a": Provide Treated Water to LADWP Option 'b": Reinject Treated Water	$40,100,000 Not applicable	$91,700,000 $118,100,100	$82,600,000 $109,000,000	$107,800,000 $134,200,000	$119,900,000 $146,300,000	$60,0000
State Agency Acceptance	DTSC and LARWQCB concur with EPA's preferred alternative.					
Community Acceptance	Community acceptance for the recommended alternative will be evaluated after the public comment period.					

● Meets Criteria Best ⊕ Meets Criteria Moderately O Meets Criteria Lease

*Costs are given as net present value of construction and operation and maintenance costs, assuming 30 years operation and 7% discount rate.

ATTACHMENT 2

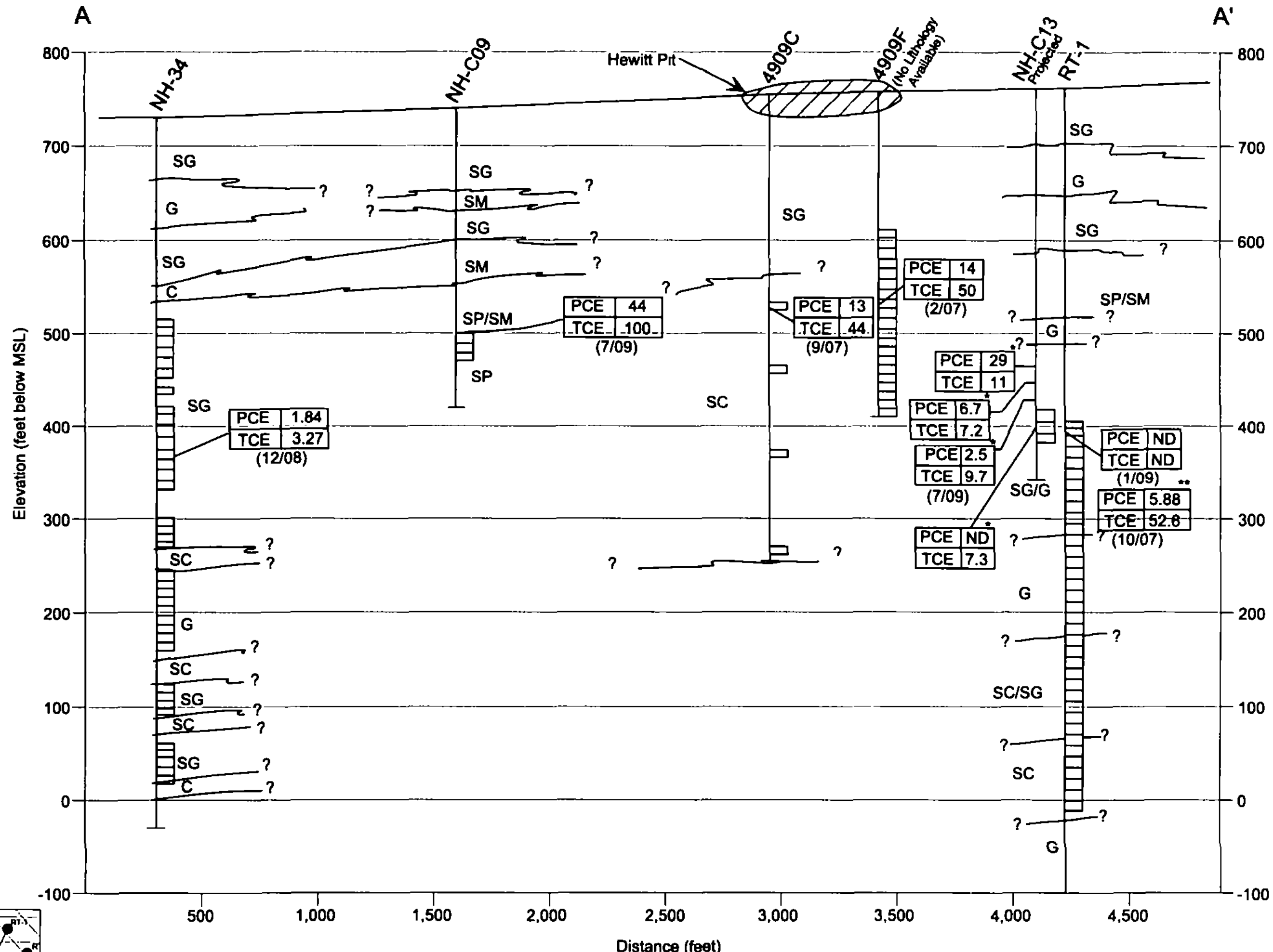
Comparison of US EPA's Proposed Plan Alternative 4a Cost Estimate vs Honeywell's Alternative 6

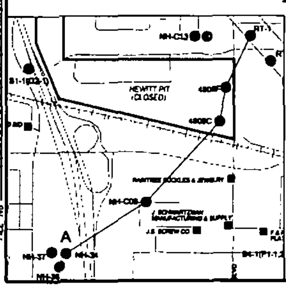
	USEPA Alternative 4a				Honeywell Alternate Remedy				
Component	*Notes*	*Capital Cost*	*O & M Cost*	*NPV (7%)*	*Notes*	*Capital Cost*	*O & M Cost*	*NPV (7%)*	*Difference*
Common Elements	Construct/sample New Monitoring Wells	$6,980,000	$758,000	$16,379,200	Construct/sample New Monitoring Wells	$700,000	$760,000	$16,400,000	$0
	CDPH 97-005 evaluation	$750,000	$0	$750,000	CDPH 97-005 evaluation	$750,000	$0	$750,000	$0
Hydraulic Containment	Deepen 4 wells, rehabilitate 4 wells	$2,740,000	$527,000	$9,274,800	Deepen 3 wells, rehabilitate 4 wells (no NHE-1)	$2,400,000	$460,000	$8,100,000	($1,170,000)
	Install and operate 3 new extraction wells including piping to NHOU treatment plant	$3,770,000	$213,000	$6,411,200	None	0	0	0	($6,410,000)
VOC Treatment	Reburbish existing air stripper Construct and operate 2nd air stripper	$1,908,140	$599,000	$9,335,740	Refurbish existing air stripper (eliminate second air stripper)	$200,000	$370,000	$4,700,000	($4,640,000)
	Construct and operate two new LPGAC treatment units	$2,870,000	$576,000	$10,012,400	Construct and operate one new LPGAC treatment unit	$1,400,000	$290,000	$5,000,000	($5,000,000)
Chromium Treatment	Interim (3 yr) wellhead treatment for 1,4 dioxane and Cr6 at NHE2	$4,130,000	$790,000	$6,199,800	Expand on-site treatment system for Cr6 and Interim onsite treatment for 1,4 dioxane at NHE2(sized for 150 gpm for 3yrs) Includes conveyance cost of $1 7M	$3,300,000	$1,140,000	$6,300,000	$100,000
	Full scale (300 gpm) wellhead treatment at NHE2 (for 30 yrs)	$3,650,000	$861,000	$14,326,400	Construct additional on-site treatment train for full scale (300 gpm) from NHE2 (for 30 yrs)	$1,200,000	$990,000	$13,500,000	($830,000)
	Combined treatment for NHE1 and 2 new extraction wells	$9,410,000	$1,691,000	$30,378,400	None			0	($30,380,000)
Dioxane Treatment	Full scale (300 gpm) wellhead treatment at NHE2	$640,000	$428,000	*$4,708,080	Additional AOP unit added to on-site system for full scale (300 gpm) onsite treatment	$600,000	$430,000	$5,700,000	0*
	Totals:			$103,067,940	*Totals:*			$60,450,000	($42,620,000)

* Need to verify the basis of NPV calculation as Honeywell's calculated NPV for same approach for 26 years comes out to $5 7M vs $4 7M

1 The preliminary estimated costs for Honeywell's Alternative Remedy are rough order-of-magnitude estimates and do not represent a formal opinion of probable cost Additional information and evaluation is required to furthei constrain the inherent uncertainties in these preliminary estimates Capital estimates have been rounded up to the nearest $100K and the O&M estimates are rounded up to the nearest $50K

2 Refer to the attached general assumptions for each of the components





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FILE No.

SM - Silty Sand
SP - Poorly Graded Sand
SG - Sandy Gravel
SC - Sandy Clay
C - Clay
G - Gravel
* - Simulprobe Samples
** - Historical High Concentration

Screened Interval

0 FEET 500
SCALE

MWH

NORTH HOLLYWOOD OPERABLE UNIT
NORTH HOLLYWOOD, CALIFORNIA

CROSS SECTION A-A'

ATTACHMENT 3

ATTACHMENT 4

NHOU POTENTIAL SOURCE EVALUATION
North Hollywood Operable Unit

	Company or Entity Name	Company or Entity Address	NHOU Facility Information	Operating History	Known Impacts to Subsurface
1	Lockheed Martin Corporation Plant C-1	6801 Rockledge Drive, Bethesda, Maryland 20817	Plant C-1 10780 Sherman Way, Burbank, CA	1948 through 1990, aircraft fabrication, metal machining and finishing, aircraft part testing, warehousing, hazardous materials and waste materials storage There was no mention of specific chemicals used other than "solvents "	VOCs in soil TCA (0 4 to 100 µg/kg), TCE (6 to 50 µg/kg), and PCE (9 3 to 210 µg/kg)
2	Lockheed Martin Corporation Building 528	6801 Rockledge Drive, Bethesda, Maryland 20817	Building 528 10811 Sherman Way, Sun Valley, CA	1951 through 1988, building restricted to office space for the Flying Tiger Line, Inc and Lockheed Air Terminal, Inc. No hazardous waste reported used or stored on-site	1,4-dioxane in soil (7100 µg/kg)
3	Lockheed Martin Corporation Plant B-5	6801 Rockledge Drive, Bethesda, Maryland 20817	Plant B-5 Empire Avenue and Clybourne Avenue, Burbank, CA	1949 through 1979, aircraft assembly and parts finishing Metal degreasing, cleaning and coating operations were conducted within the plant. A 1,200-gallon TCA degreaser, two 50-gallon PCE degreasers and a 2,900-gallon chromic acid tank existed	No known impacts
4	California Car Hikers	11590 Tuxford Street, Sun Valley, CA 91352	Tuxford Landfill 11590 Tuxford Street, Sun Valley, CA 91352	1948 to 1961 - Class II Landfill	VOCs in groundwater of TCE (0 to 98 µg/L) and PCE (0 to 12 µg/L)
5	Hawker Pacific Aerospace	11310/11240 Sherman Way, Sun Valley CA 91352	Hawker Aerospace, 11310/11240 Sherman Way, Sun Valley CA 91352	Since 1966, aircraft parts manufacturing and refurbishing Chromium plating and TCA degreasing	VOCs in soil of PCE (550 mg/kg), chromium (total) (2 to 180 mg/kg), and hexavalent chromium (5 to 34 mg/kg)
6	CalMat Company dba Vulcan Materials Company, Inc	Vulcan Materials Company, Inc 1200 Urban Center Drive Birmingham, AL 35242	Hewitt Landfill 7361 and 7245 Laurel Canyon Blvd , N Hollywood, CA 9160	1962 to 1975 Class II Landfill	1987 the highest TCE in groundwater (45 µg/L) and PCE (200 µg/L) concentrations in the on-site upgradient well Downgradient well during the same year were TCE (71 µg/L and PCE (6 µg/L) After 4 rounds of sampling (1989) these wells were non-detect for VOCs
7	L A By-Products, Co	4050 Katella Ave Ste 209, Los Alamitos, CA 90720	Tuxford Landfill Sun Valley, CA 91352	Tuxford Landfill 1948 to 1961 Class II Landfill	VOCs in groundwater TCE (0 to 98 µg/L) and PCE (0 to 12 µg/L), chromium (total) (4 2 to 12 µg/L), and 1,4-dioxane {1 to 5 µg/L
8	L A By-Products, Co	4051 Katella Ave Ste 209, Los Alamitos, CA 90720	Strathern Landfill Sun Valley,CA 91352	Strathern Landfill 1992 to Present Class II Landfill	PCE in groundwater (1 to 15 µg/L) and chromium (total) 110 to 20 µg/L\
9	L A By-Products, Co	4052 Katella Ave Ste 209, Los Alamitos, CA 90720	Penrose Landfill Sun Valley, CA 91352	Penrose Landfill 1958 to 1985 Class II Landfill	PCE in groundwater (1 to 36 µg/L), chromium (total) (10 to 20 µg/L), and 1,4 dioxane 11 to 5 µg/L\
10	L A By-Products, Co	4053 Katalla Ave , Ste 209, Los Alamitos, CA 90720	Newberry Landfill Sun Valley, CA 91352	Newberry Landfill 1948 to 1955 Class II Landfill	PCE in groundwater (1 to 6 4 µg/L) and hexavalent chromium (0 to 0 79 µg/L)
11	Pick-Your-Part-Auto Wrecking	1301 East Orangewood Ave , Anaheim, CA 92805	Gregg Pit/Benz Dump Sun Valley,CA 91352	Unknown	Maximum concentrations TCE (14 µg/L), PCE (280 µg/L), and Chromium (ND)
12	Waste Mgmt. Recycling & Disposal Services of CA, Inc	1001 Fannin Street, Ste 4000, Houston, TX 77002	Bradley Landfill and Recycling Center, 9227 Tujunga Ave , Sun Valley, CA 91352	1978 to Present Class III Landfill	Maximum concentrations TCE (50 µg/L), PCE (35 µg/L), and Chromium (174 µg/L)
13	The Millwood and Mildred Cooke Trust/Amended Cooke Family Trust - Mr William L. Cooke/Mr Jerry Conrow Trustees	23871 Madison Street Torrance, CA 90505	Fleetwood Machine Products 11447 Vanowen Street, North Hollywood, CA 91605	Metal machining shop (since 1953), TCA and various solvents used Appeared on 1960 Sanborn map as "Aircraft Parts Mach Shop"	1992 soil - PCE (16,000 µg/kg) and TCA (16,000 µg/kg)
14	Mr Niels Bruun-Anderson-Trustee of the Else Bruun-Anderson Trust (Trust reported as terminated)	Unknown	Pacific Steel Treating 6829 Farmdale Avenue, North Hollywood, CA 91605	Steel treating operation PCE, TCA, TCE used Three clarifiers In operation	PCE in soil (9,600 to 28,000 µg/kg) 1,1,1-TCA (300 to 500 µg/kg). SVE system has operated on-site
15	Extra Space of Vanowen Street, LLC	2795 East Cottonwood, Ste 400, Salt Lake City, Utah 84221, Mr Charles Allen (owner as of 2003) Prior owner-Davis-Cohen Investments, LLC (Jean David Cohen) 5636 Valview Street, Turner, Oregon 97392	AAA Metal Plating (aka Joe's Metal Polishing), 11417 -11423 Vanowen Street, Units 29 -31, North Hollywood, CA 91605	Plating operations (1960 to present) 27 other units within this industrial center historically for aerospace manufacturing	Several violations of hazardous waste discharge Soil -chromium (total) (8 to 43 mg/kg) Concrete (186 mg/kg) Removal action conducted (DTSC Voluntary Cleanup Agreement)

ATTACHMENT 4

NHOU POTENTIAL SOURCE EVALUATION
North Hollywood Operable Unit

16	Luis Lanier, Lanier Investments	16216 Kittridge Street, P O Box 1 Van Nuys, CA 91408	F&H Plating, Inc, 12023 Vose Street North Hollywood, CA 91605	1984 to present - Metal Plating - Cyanide (copper, potassium, sodium, zinc), Acids (chromic, muriatic, sulphuric, nitric, boric), electro-cleaner x-cel 133, various solvents, lacquer thinner, baking enamel, TCA, water displacement thinner, selenium and copper salts, inorganic acids K-stanate, Brass and Tinglo Culmo Brightener. Stopped chrome plating in 1993	2004, Soil - chromium (total) (58 mg/kg) and hexavalent chromium (0 91 to 2 4 mg/kg) 2005, Soil - chromium (total) (39 6 mg/kg), no hexavalent chromium analysis
17	Casa de Chrome	Thomas Oya property owner deceased	6868 Farmdale Avenue, North Hollywood, CA 91605	1974 to 1992 - copper, nickel and chromium, electroplating, Including chemical stripping, mechanical polishing, acid dipping and repair.	1994 limited site investigation during RWQCB Well Investigation Program Low levels of chromium (total) (less than 10 mg/kg) and hexavalent chromium (non-detect)
18	Wilke Family Trust -1989 Living Trust	789 South Kellog Avenue, Goleta, CA 93117	Electromatic, Inc 7351 Radford Avenue, North Hollywood, CA 91605	Since 1977 - Electropolishing and passivation of alloy resistant steel parts Wastewater treatment chrome reduction and sodium hydroxide pH adjustment precipitation	Soil of TCE (142 µg/kg) and 1,1,1 TCA (83 µg/kg), and hexavalent chromium (0 11 to 1 74 mg/kg)
19	Vineland Partnership Property Managers - Carnahan & Assoc	20121 Ventura Blvd Ste 203, Woodland Hills, CA 91364	Skipower Plating Works 7131 Vineland Avenue, North Hollywood, CA 91605	Since 1972 - Electroplating of antimony, copper cadmium, indium, mercury, nickel, lead	Soil chromium (total) (less than 10 mg/kg) and hexavalent chromium (non-detect)
20	Mark and Madelin Waco	10042 Sylvia Ave, Northridge, CA	CWH Co 7303 Lankershim North Hollywood, CA 91605	1968 -1980 -Rytyron Co 1980 - 1982 - Trimm manufacturing plating operations No other information on these operations	Soil, chromium (total) (non-detect to 76 mg/kg) and hexavalent chromium (non-detect)
21	Marvin M Chalek Fourth Amended Intervivos Trust (purchased property 1987)	Global Outfitters, Inc, 7115 Laurel Canyon North Hollywood, CA 91605	Raintree Buckles and Jewelry 7115 Laurel Canyon, North Hollywood, CA 91605	1987 -1996 - TCA used on-site	VOCs in soil PCE (1,200 mg/kg) and TCA (17 mg/kg) 8-inch diameter stormwater diversion hole on-site
22	Hansen Distributing Company	Mark Ziv 8238 Lankershim, North Hollywood, CA 91605	Spray Company (Sprayco), Inc 12600 Saticoy Street, North Hollywood, CA 91605	1982-1991 - Transglobe Imports/Sprayco, Inc (In 1991 Sprayco filed for bankruptcy & moved to Simi Valley operating under the name of Royal Coding Metals, Neville Isaacson, P O Box 8059, Northridge, CA 91237). TCA degreaser on-site. Sprayco was either a plating or painting contractor (one doc says plating another says painting).	1990 - L. A County DHS Hazmat responded to a complaint from the neighbor of Sprayco about "leaking and fuming drums." When the responders arrived on-site, there was a large pool of grayish liquid on the southern property line The liquid resulted from washing painted parts after dipping in a stripper drum The comment from a Sprayco representative was "we always do it that way"' The RWQCB performed an inspection of the site a couple months later and ordered Sprayco to issue a subsurface investigation workplan Sprayco filed for bankruptcy in 1991 and the property owner was left to implement the work Chromium (total) (4 to 81 mg/kg) reported in soil 2001 RWQCB chromium inspection recommended NFA
23	Property owner Mr Irving Berken and Mr Ralph Woodhouse	809 South Bundy Dr, Los Angeles, CA and 10452 Via Cantabria, San Juan Capistrano, CA	Current - Caravan Fashion Former - Microdot Kaynar Aerospace Fastening Systems and Mercury Aerospace Fasteners, 11800 Sherman Way, North Hollywood, CA 91605	Machined fasteners for the aerospace industry 1972 -1987 TCA degreaser	1984 spill and L A DHS reports multiple discharges Soil chromium (total) (320 to 1,350 mg/kg) RWQCB inspected and further assessment was recommended 2004, property owners consultant stated no chromium plating ever performed. 2004, RWQCB issues NFA

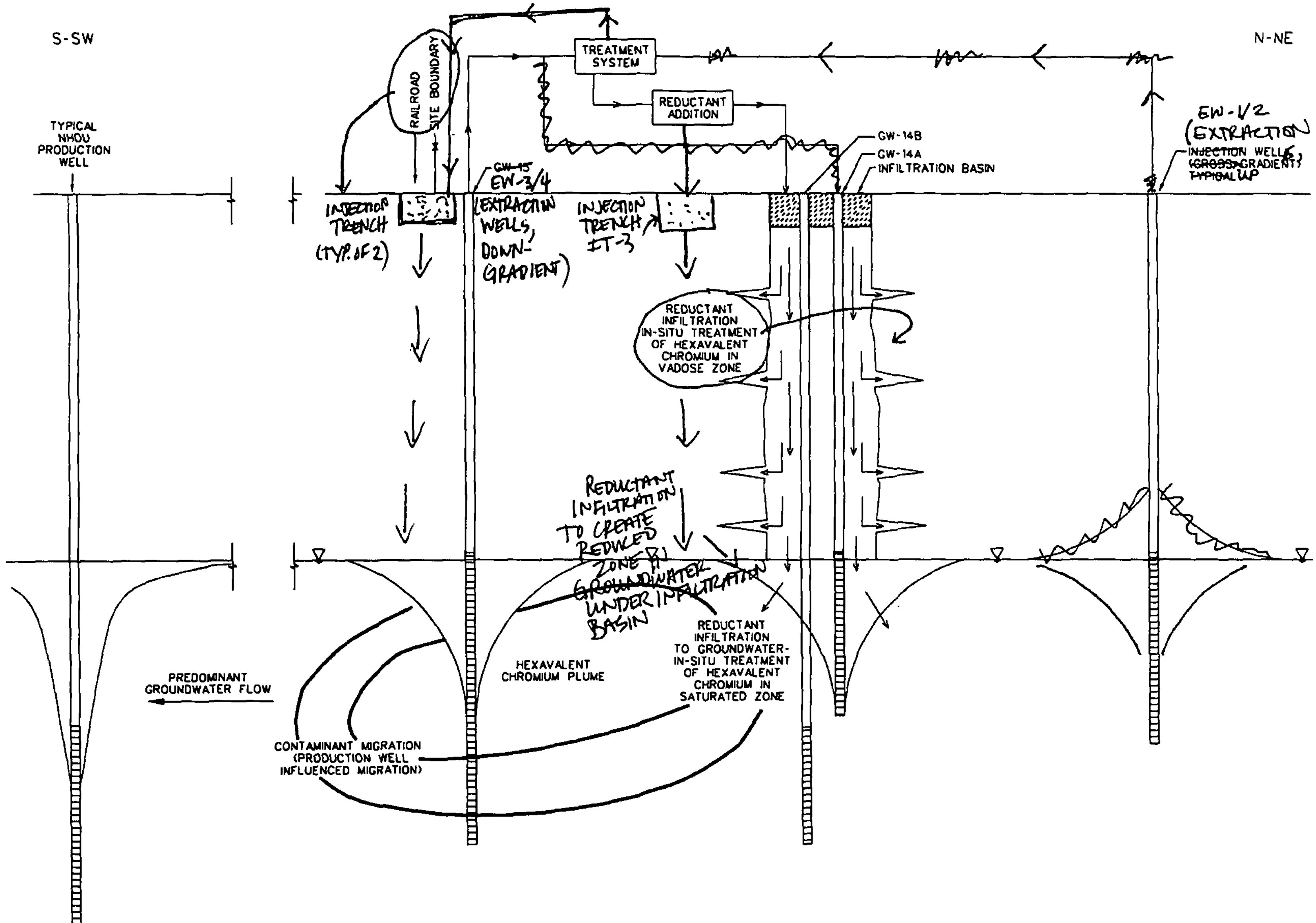
ATTACHMENT 4

NHOU POTENTIAL SOURCE EVALUATION
North Hollywood Operable Unit

24	Nickel Solution Recycling, Inc	Unknown	Current - Aerostrar Moving and Shipping Former - Nickel Solution Recycling, Inc, 11940 Sherman Road, North Hollywood, CA 91605	Metals recycling facility	No Water Board or DTSC files found -1983 - EPA SI, Discovery, and Preliminary Assessment, 1983 - Removal Action, 1984 - Section 107 Litigation and Consent Agreement (Administrative), 1990 - Expanded SI, NFA 1992 - DTSC SI, 1996 - 551 Reassessment EPA - NFA
25	Metal Improvement Company	Global Headquarters 80 Route 4 East, Suite 310 Paramus, NJ 07652	EM Coating Services, 6940 Farmdale Avenue	Evertube Corporation 1953-1985, E/M Corporation 1985-2003, EM Coating Services -through 2008 Manufactures high performance coating product line, solid film lubricants, electronic shielding materials, highly corrosive resistant coatings Chemicals included are 1,1 1-TCA, 1,4-Dioxane, PCE, various solvent mixtures, acids (chromic) No Water Board file for review	PCE in soil (9 to 80 µg/kg)
26	Remo, Inc	28101 Industry Drive Valencia, CA 91355	Remo, Inc, 12804 Rayner Street	Manufacturing of drumheads and percussion instruments No RWQCB file for review	VOCs in soil: PCE (2 5 to 371 µg/kg) and 1,1,1-TCA (4,1 to 775 µg/kg) EPA NFA before further investigation was performed
27	Chase Chemical Company - a dissolved California Corporation (former Holchem facility)	Unknown	Former Holchem Facility, aka Chase Chemical Facility, 13540 and 13546 Desmond Street, Pacoima, CA	1967 to 1987 - Chase Chemical Company, stored industrial chemicals (USTs/ASTs) 1987 Holchem, Inc leased the property. 1988 20 USTs removed 1999 Holchem purchased property	No file review performed Following information found at www crala net/internet-site/search results cfm Soil and groundwater impacted Groundwater conc TCE (51 µg/L), PCE (13 µg/L) Draft Remedial Design as of Dec 2007
28	Price Pfister	19701 Da Vinci Foothill Ranch, California 92610	Former Price Pfister facility 13500 Praxton, Pacoima, CA 91331	Unknown	Active RWQCB site. hexavalent chromium (1,500 µg/L) and 1,4-dioxane (1,400 µg/L). www crala.net/internet-site/search results cfm
29	Jac-Nup Corporation former Nupla Plastics Corporation	11912 Sheldon St, Sun Valley, CA 91754	Nupla Plastics Corporation 11912 Sheldon St, Sun Valley, CA 91754	Manufacturer of fiberglass handles for tools since 1940	VOCs in soil TCA (24 mg/kg) and TCE (351 mg/kg)
30	Los Angeles Unified School District	11247 Sherman Way	Los Angeles Unified School District, Sun Valley Garage	School district fueling facility for school buses and district automobiles. Bus Maintenance since 1967	VOCs in groundwater PCE (7 3 µg/L) and benzene (6.7 µg/L)
31	City of Los Angeles, Los Angeles Department at Water and Power	L A San Fernando Valley Shop and Warehouse 12201 Sherman Way, North Hollywood, CA 91605	L A San Fernando Valley Shop and Warehouse 12201 Sherman Way, North Hollywood, CA 91605	L.A City property since 1960 Appears on 1960 Sanborn map Automotive repair and maintenance Motor oil, used motor oil, hydraulic oil, mineral spirits, transmission fluid, anti-freeze, diesel fuel, gasoline stored on-site	In 1988, the City at Los Angeles performed a subsurface investigation near a chemical storage area and storm drain without the RWQCB's approval. The City's field, sampling and laboratory standards were in question by the RWQCB. A second investigation was conducted with RWQCB staff approval, but with the same deficiencies. Soil concentrations were moderately low, PCE and TCA were less than 100 µg/kg An Oct 1991 letter from the RWQCB outlined the deficiencies in the investigation, but also grants a no further subsurface investigation Apr 1997, RWQCB issues formal NFA letter to the City of Los Angeles

Notes:

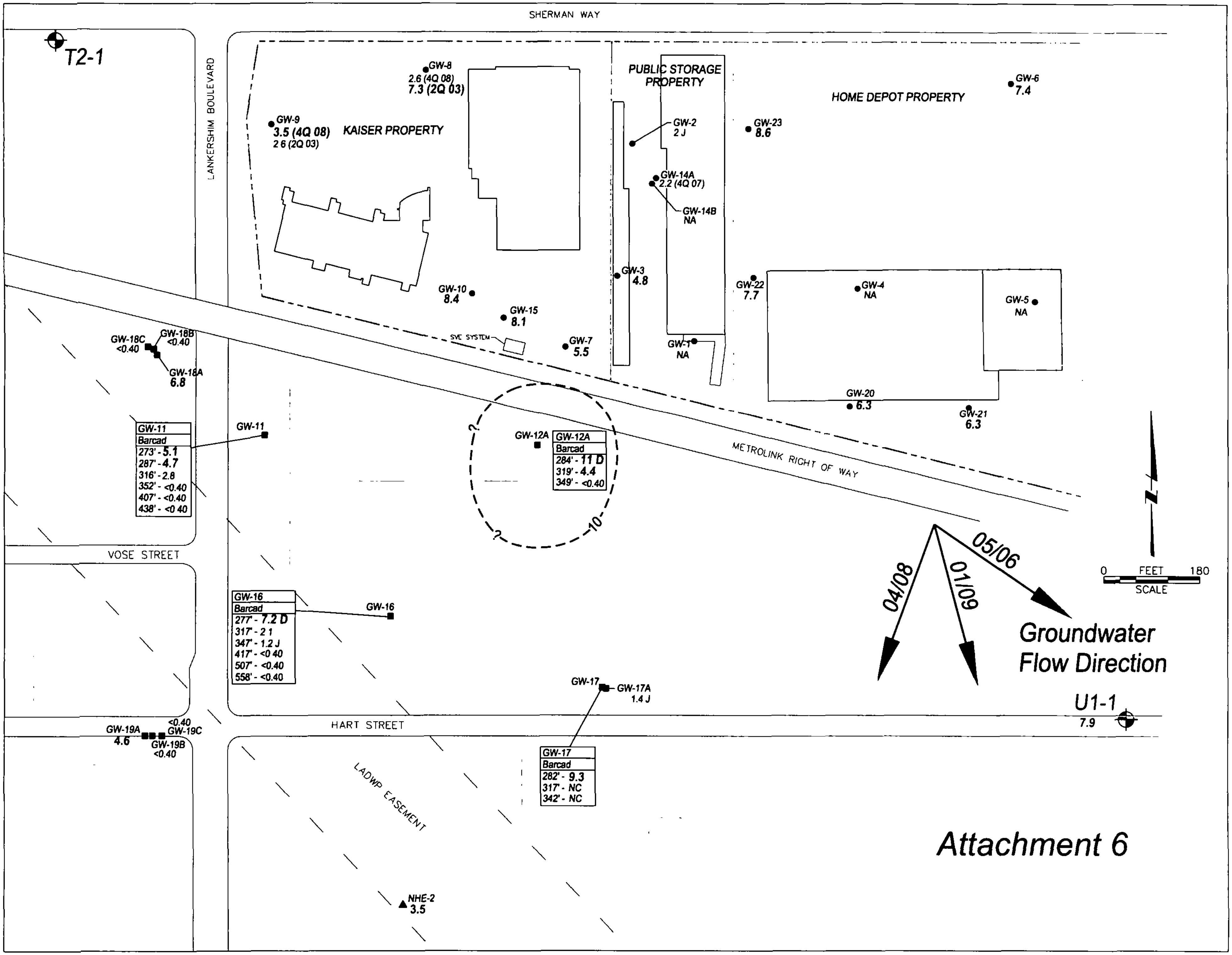
AST - Aboveground storage tank
DHS - Department of Health Services
EC - Emerging chemicals
EPA - U S Environmental Protection Agency
mg/kg - Milligrams per kilogram
NFA - No further action
PCE - Tetrachloroethene
RWQCB - California Regional Water Quality Control Board
SVE - Soil vapor extraction
TCA - Trichloroethane
TCE - Trichloroethene
TPH - Total petroleum hydrocarbons
UST - Underground storage tank
µg/kg - Micrograms per kilogram
µg/L - Micrograms per liter
VOCs - Volatile organic carbons

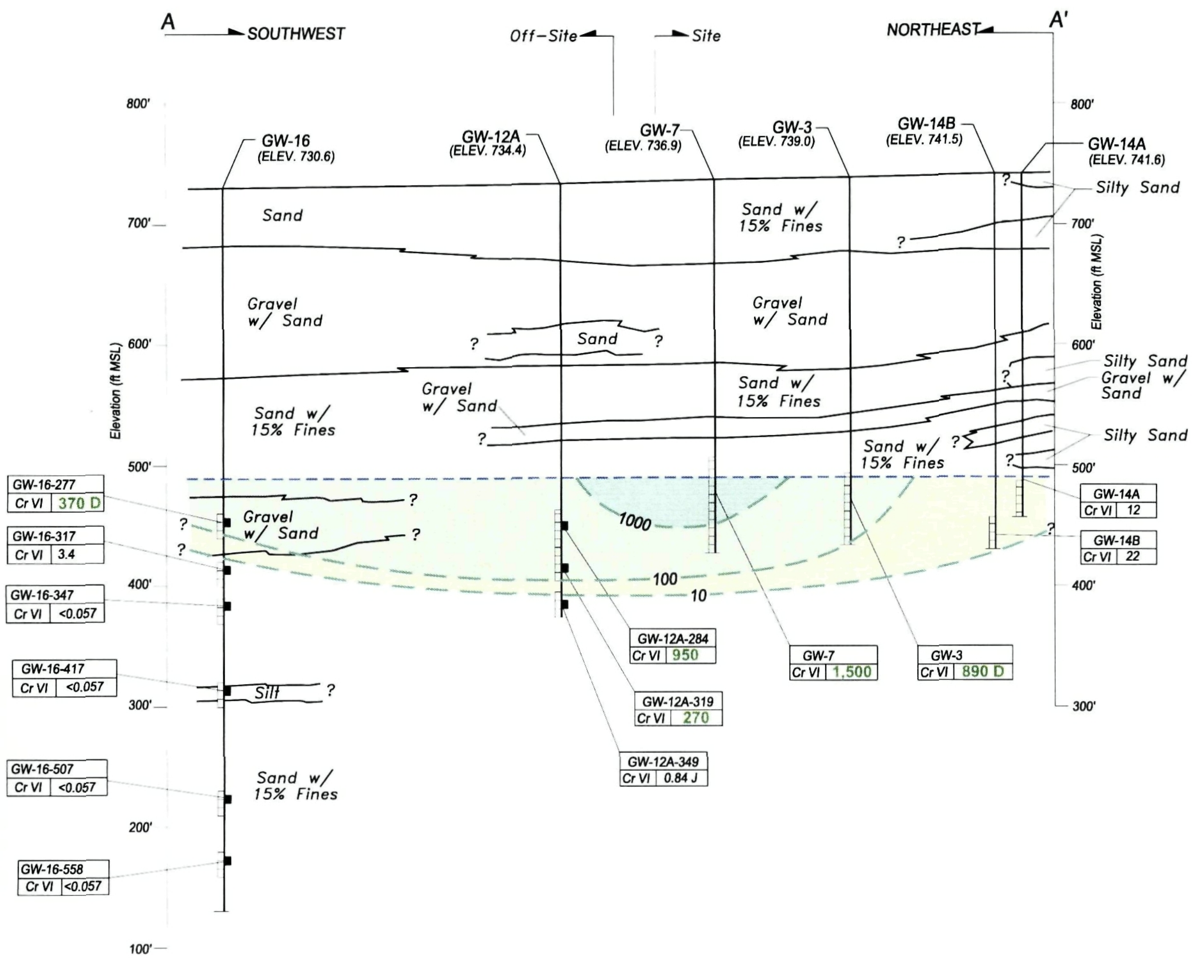


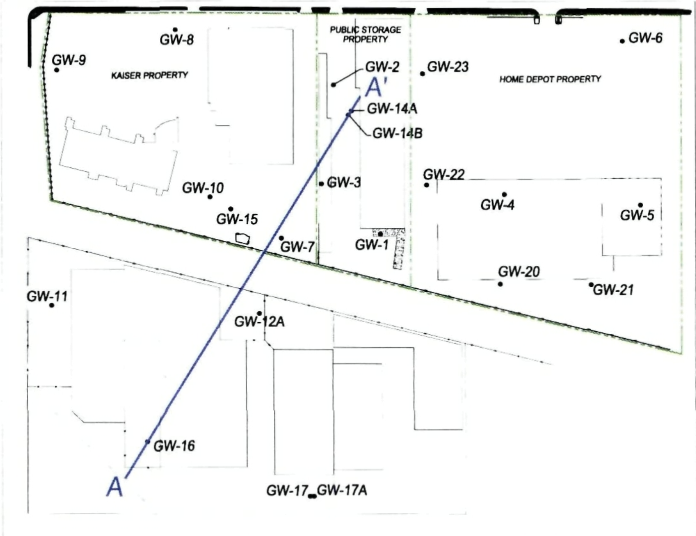
Source: MWH, 2004

Attachment 5

ES062008012RDD_03 (6/12/09)


SHERMAN WAY
T2-1
LANKERSHIM BOULEVARD
GW-8
2.6 (4Q 08)
7.3 (2Q 03)
GW-9
3.5 (4Q 08)
2 6 (2Q 03)
KAISER PROPERTY
PUBLIC STORAGE PROPERTY
HOME DEPOT PROPERTY
GW-6
7.4
GW-2
2 J
GW-23
8.6
GW-14A
2.2 (4Q 07)
GW-14B
NA
GW-3
4.8
GW-22
7.7
GW-4
NA
GW-5
NA
GW-10
8.4
GW-15
8.1
SVE SYSTEM
GW-7
5.5
GW-1
NA
GW-18C
<0.40
GW-18B
<0.40
GW-18A
6.8
GW-20
6.3
GW-21
6.3
GW-11
GW-11
Barcad
273' - 5.1
287' - 4.7
316' - 2.8
352' - <0.40
407' - <0.40
438' - <0 40
GW-12A
GW-12A
Barcad
284' - 11 D
319' - 4.4
349' - <0.40
?
?
10
METROLINK RIGHT OF WAY
N
04/08
01/09
05/06
Groundwater Flow Direction
0 FEET 180
SCALE
VOSE STREET
GW-16
GW-16
Barcad
277' - 7.2 D
317' - 2 1
347' - 1.2 J
417' - <0 40
507' - <0.40
558' - <0.40
GW-17
GW-17A
1.4 J
U1-1
7.9
HART STREET
GW-19A
4.6
<0.40
GW-19C
GW-19B
<0.40
GW-17
Barcad
282' - 9.3
317' - NC
342' - NC
LADWP EASEMENT
NHE-2
3.5
Attachment 6





CROSS SECTION LOCATION

LEGEND:

GW-7	SOIL BORING AND GROUNDWATER MONITORING WELL
	WELL SCREEN INTERVAL AND BARCAD SLOTTED WATER INTAKE
	GROUNDWATER ELEVATION INTERPRETED FROM UPPERMOST WATER-BEARING INTERVALS MONITORED
?	INTERPRETED LITHOLOGY BASED UPON OBSERVATIONS AT COMPLETED BORINGS
Cr VI	HEXAVALENT CHROMIUM
ug/L	MICROGRAMS PER LITER
10	CR VI ISOCONCENTRATION CONTOUR (UG/L)
GW-14A Cr VI 1.0	CONCENTRATIONS OF HEXAVALENT CHROMIUM IN UG/L DETECTED IN GROUNDWATER SAMPLES (2nd QUARTER 2009)
51	CONCENTRATION ABOVE THE MAXIMUM CONTAMINANT LEVEL OF 50 UG/L
J	ESTIMATED VALUE
<	LESS THAN LISTED METHOD DETECTION LIMIT
?	NOT ENOUGH DATA TO INTERPRET FURTHER
D	DUPLICATE SAMPLE

MWH

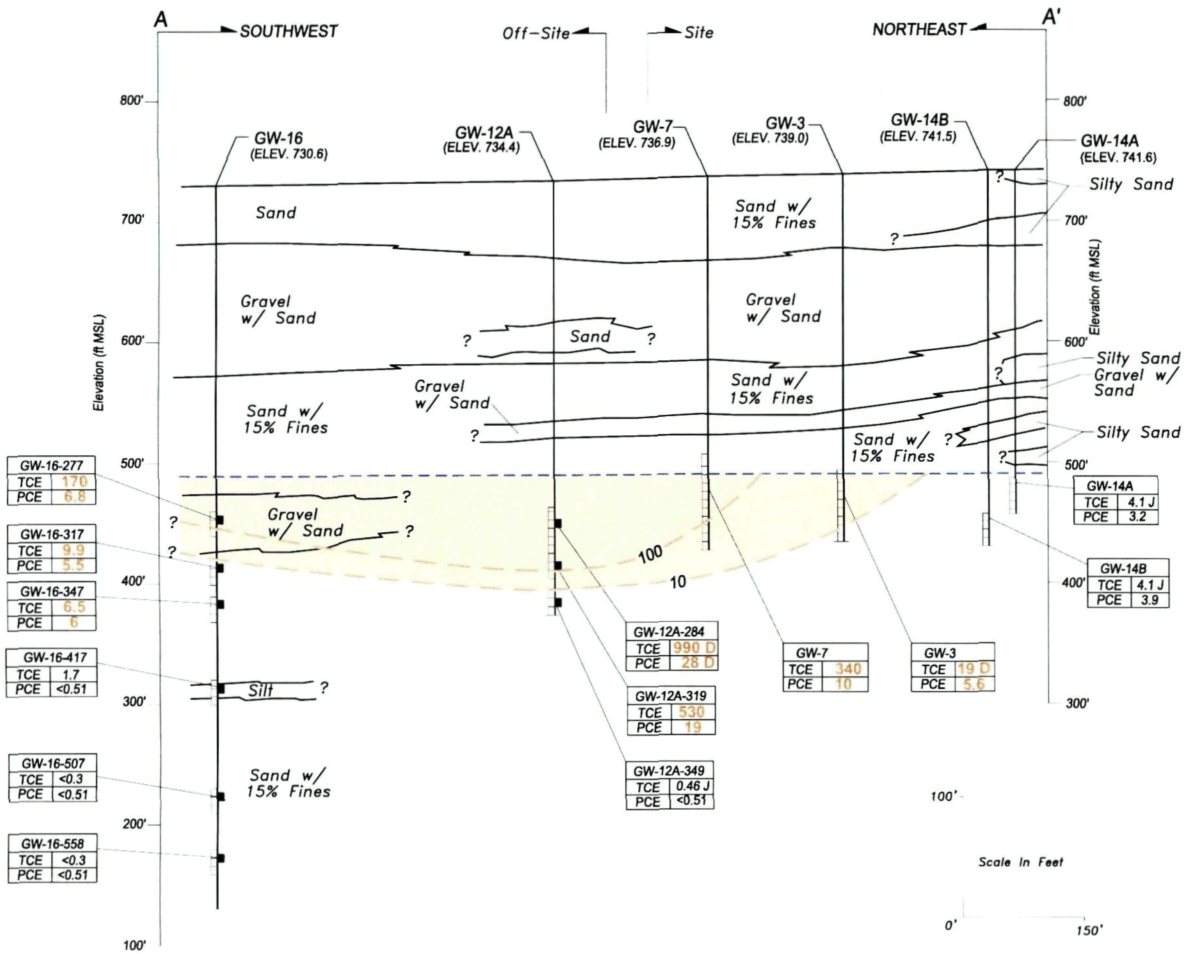
HONEYWELL NORTH HOLLYWOOD SITE
NORTH HOLLYWOOD, CALIFORNIA

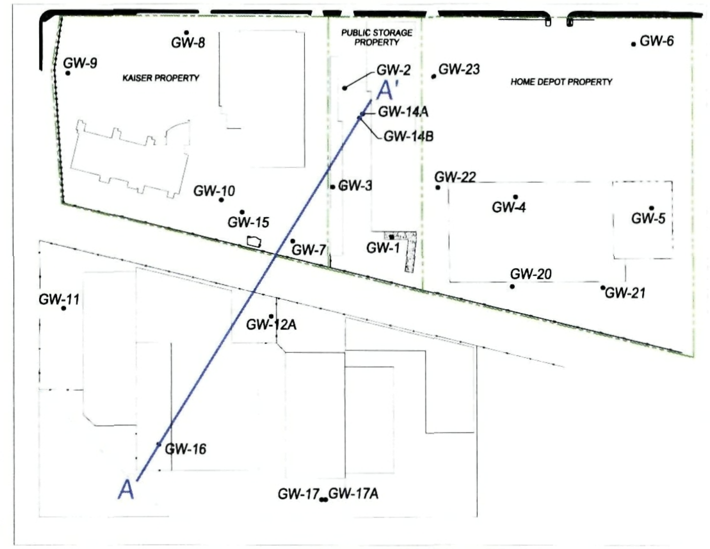
HEXAVALENT CHROMIUM CONCENTRATIONS IN GROUNDWATER CROSS SECTION A-A'

APRIL 2009

ATTACHMENT 7A

FILE No. INDSVR\INDUSTRIAL\CAD MLUEBKE\HONEYWELL\NORTH HOLLYWOOD\XSEC & CONTOUR APRIL 2009





CROSS SECTION LOCATION

LEGEND:

GW-7	SOIL BORING AND GROUNDWATER MONITORING WELL
	WELL SCREEN INTERVAL AND BARCAD SLOTTED WATER INTAKE
	GROUNDWATER ELEVATION INTERPRETED FROM UPPERMOST WATER-BEARING INTERVALS MONITORED
?	INTERPRETED LITHOLOGY BASED UPON OBSERVATIONS AT COMPLETED BORINGS
PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE
ug/L	MICROGRAMS PER LITER
10	TCE ISOCONCENTRATION CONTOUR (UG/L)
GW-14A TCE 59 PCE 8.9	CONCENTRATIONS OF TCE & PCE IN UG/L DETECTED IN GROUNDWATER SAMPLES (2nd QUARTER 2009)
6	CONCENTRATION ABOVE THE MAXIMUM CONTAMINANT LEVEL OF 5 UG/L
<	LESS THAN LISTED METHOD DETECTION LIMIT
J	ESTIMATED VALUE
?	NOT ENOUGH DATA TO INTERPRET FURTHER

MWH

HONEYWELL NORTH HOLLYWOOD SITE
NORTH HOLLYWOOD, CALIFORNIA

KEY VOC CONCENTRATIONS IN GROUNDWATER CROSS SECTION A-A'
APRIL 2009
ATTACHMENT 7B

FILE No. INDSVR\INDUSTRIAL\CAD MLUEBKE\HONEYWELL\NORTH HOLLYWOOD\XSEC & CONTOUR APRIL 2009